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The two books of nature and revelation collated

THE

TWO BOOKS

OF

NATURE AND REVELATION

COLLATED.

BY

GEORGE D. ARMSTRONG, D.D.,

Pastor of the First Presbyterian Church of Norfolk, Va., and formerly Professor of Chemistry and Geology in Washington and Lee University, Lexington, Va.

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PREFACE.

It is sometimes said that scientific questions can be intelligently decided by scientists alone; and for this reason people of ordinary intelligence and education must take these decisions on trust. This is true respecting certain questions; but, at the same time, it is true that the great body of our modern science, the science involved in the decision of such questions as those discussed in the present volume, can be brought fully within the reach of the understanding of any well-informed man of average intelligence, if an honest effort is made to do it. Such a man might not be able to construct the argument for himself, but when it is fairly presented he can judge and reach his conclusions for himself as safely as the scientist can.

Edward Clodd, F.R.A.S., must have believed this in so far as the questions concerning primeval man are concerned, for he wrote his "Childhood of the World" for the use of youth in a course of education. Professor Huxley must have believed this in so far as evolution is concerned, for most of his "Lay Sermons and Addresses" and his New York "Lectures on Evolution" were originally addressed to popular audiences. Professor Robertson Smith and Dr. Toy must have believed this in so far as the authenticity and genuineness of the Pentateuch are concerned, for the first-named addressed his "Lectures on the Old Testament in the Jewish Church" to a popular audience, and Dr. Toy wrote his

"History of the Religion of Israel" for the use of the advanced classes in Sabbath-schools.

In the present volume the author has sought: (1) To popularize the discussion of the matters treated of, avoiding as far as possible the use of technical terms, or, where such terms were, for any reason, used, adding immediately an explanation thereof; and (2) to bring the discussion within the limits of a single volume of moderate size, by taking no notice of irrelevant matters and matters of little importance, and confining his attention to the strong points alone—the points upon which a correct decision of the questions at issue must turn. How far he has succeeded in this he must leave the reader to judge.

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THE TWO BOOKS OF

NATURE AND REVELATION COLLATED.

I.

NATURE AND REVELATION.

§ 1. "*The Border-land.*"

"The border-land between science and religion is one which men cannot be prevented from entering; but what they may find there depends very much on themselves. Under wise guidance it may prove to us an Eden, the very gate of heaven, and we may acquire in it larger and more harmonious views of both the seen and the unseen, of science and religion. But, on the other hand, it may be found to be a battle-field or a bedlam, a place of confused cries and incoherent ravings, and strewn with the wrecks of human hopes and aspirations." (Dawson's "Facts and Fancies of Modern Science," p. 14.)

What Principal Dawson here remarks as true of science and religion is, of necessity, true of science and the revelation of the one only true religion contained in the Scriptures. In making a revelation of religious truth in such a form as to be easily intelligible to man, especially "the common people," the Scriptures very wisely present us with, not a "Confession of Faith," not a treatise on "Systematic Theology," but with that truth

as it is incorporated in the history of the Church and the life and experience of God's people in the world. The Bible contains very little didactic discussion or logical exhibition of the truth it teaches, but is largely made up of history, the biographies of saints and sinners, of psalms and proverbs and prophecies, and the story of the life and teachings of the God-man during His brief sojourn among men. Admitting, then, as every thoughtful reader must, that there is no intention on the part of the sacred writers to teach us science, in the distinctive sense of that term, in the Scriptures, it will be seen at once that the Scriptures, on the one hand, and geography, history, chronology, and science, physical and metaphysical, on the other, must often cover the same ground, not for the same purpose, it is true, but yet must often cover the same ground ; that there is a border-land in which the students of Scripture and science must meet, and will have occasion to examine the same subjects, and deal with the same facts. As Principal Dawson remarks, " Man cannot be prevented from entering this border-land ;" nor is it desirable, in the interest either of religion or science, that he should be. The Christian believes that the Bible and nature are both alike from God—a God of truth ; and from this it necessarily follows that when rightly interpreted they will harmonize and illustrate each other. Yet, as a matter of fact, nothing is more certain than that divines and scientists have often been in conflict ; and at the present day the most persistent attacks upon Christianity are from the side of science, thus illustrating the truth of the remark " that what men may find in this border-land depends very much upon themselves"—the purpose with which they enter that land, and the spirit in which they pursue their investigations.

"At the time of the meeting of the British Association in 1865, some six hundred and seventeen scientific men signed a paper containing the following declaration—viz.: 'We conceive that it is impossible for the Word of God, as written in the book of nature, and God's word, written in Holy Scripture, to contradict one another, however much they may appear to differ. We are not forgetful that physical science is not complete, but is only in a condition of progress, and that at present our finite reason enables us to see as through a glass darkly, and we confidently believe that a time will come when the two records will be seen to agree in every particular.'" ("Current Discussions in Theology for 1883," pp. 7, 8.)

§ 2. *Science as yet Incomplete.*

There is and there can be no conflict between science and revelation; but there is and there has long been conflict between scientists and divines; and a fruitful source of this conflict is, as intimated in the paper of the British scientists, quoted above, the present incompleteness of science. Taking science as it is set forth in the popular writings of the day, we will find it consisting of two distinct and separable portions—viz.: (1) a body of well-ascertained facts and principles, which make up the science itself; and (2) a body of hypotheses and conjectures, more or less probable, by means of which men are endeavoring to enlarge the domain of science. It would be a great mistake to reject the use of all hypotheses simply because they were unproven. The history of science furnishes abundant evidence that hypotheses, even such as have afterward turned out to be incorrect, have been of great use in directing the course of investigation and experiment on the part of those who

were laboring for the enlargement of human knowledge. Like the scaffold used in the erection of a building, they have been of great service while the building is going up, though removed as of no value after the building is completed. But we should never forget that unproved hypotheses are not an integral part of science itself. Much of the seeming discrepancy between science and revelation to-day arises out of a disregard of this distinction, and a consequent declaration that science testifies to this, and science testifies to that, when, in fact, the testimony is not that of science, but that of some unproved hypothesis. Prof. Huxley never wrote a truer thing than when he wrote: "Men of science, like young colts in a fresh pasture, are apt to be exhilarated on being turned into a new field of inquiry, and to go off at a hand gallop, in total disregard of hedges and ditches, losing sight of the real limitation of their inquiries, and to forget the extreme imperfection of what is known." ("Origin of Species," Lecture I.)

§ 3. *Premature Announcements.*

In the early part of the present century a great excitement was created in the scientific world by the discovery of "the zodiacs of Dendera and Esne in Egypt." The zodiac painted upon the ceiling of the temple at Dendera "is headed by the sign of the Lion, followed by the Virgin, the Balance, the Scorpion, the Archer, and Capricorn in the same line. The peculiar arrangement of these figures represented, it was said, the exact position of the constellations when the zodiac was constructed, and it was ascertained by appropriate calculations that it was much older than the beginning of the period embraced in the Christian chronology." In 1821 the zodiac of Dendera, having been carefully detached from

the ceiling of the temple, was brought safely to Paris. "M. Greppo describes the interest which it awakened: an object of interest to educated men, and of vanity to those who thought themselves such, it could not remain unnoticed by the multitude; and classes of society who knew not even the significance of the term zodiac rushed in crowds to behold it. In the journals, in the saloons, the zodiac was the only topic of discussion. Have you seen the zodiac? What do you think of the zodiac? were questions to which every one was seemingly compelled to give a well-informed answer, or to be degraded from a place in polished society. Tracts were circulated in Paris to disseminate the fact that the Christian chronology was set aside." (Southall's "Recent Origin of Man," pp. 76, 77.) Subsequent and more thorough investigation, especially that of the younger Champollion in Egypt, has shown, beyond all question, that this announcement was premature, that "these zodiacs belonged to the first and second centuries of the Christian era, and were 'schemes of nativity,' and had reference to 'judicial astrology.'"

In his admirable lecture on "The Education of the Judgment," Professor Faraday dwells upon the importance of "reserving judgment" in matters imperfectly known. Had scientists generally learned this lesson, the history of modern science would have furnished no occasion for such a chapter as Chapter V. in Southall's "Recent Origin of Man" on "The Fickleness of Science."

§ 4. *The Language of Scripture.*

The language of common life is very different from that of science. In common life we speak of things as they appear, as they become known to us directly through the use of our senses. In science we seek to

represent things as they really are, and to do this with accuracy and completeness; and as science has especially to do with the relation of cause and effect, we speak of phenomena with the purpose of expressing this relation. In the language of common life we say the sun rises; and this, although we know perfectly well that the motion of the sun is apparent and not real—produced by the turning of the earth upon its axis. In the language of astronomy we would say the sun appeared above the horizon in consequence of the revolution of the earth upon its axis; or, if we wished to be particularly accurate, we would add, and the earth's motion in its orbit, and the refraction of light in passing through the earth's atmosphere; for both of these last-mentioned causes has something to do with the time of the sun's appearance above the horizon.

To the use of scientific language in common life there are two objections—viz.:

(1) Such language is, to a large extent, unintelligible to the mass of the people. Even among the learned, in one department of science, the language of another department may be unintelligible. Many an able mathematician cannot read understandingly a page of modern chemistry; and many an accomplished chemist would find himself completely at a loss in attempting to get at the meaning of a page of the best treatise we have on analytical geometry.

(2) Scientific language, especially that of what are called, distinctively, the natural sciences, generally incorporates in itself so much of current hypothesis—often of hypothesis afterward abandoned—that the writings of the men of one age are unintelligible to those of another, unless read in the light which the history of the science casts upon their meaning. In illustration of this

remark, take a brief extract from Nicholson's "Philosophy," a standard work in its department a century ago.

In his chapter on "The Marine Acid, and the Combinations in which it is a Principal Part," Nicholson writes: "Black manganese is the calx of a semi-metal, which has a strong tendency to combine with phlogiston. If four ounces of marine acid, with one ounce of this calx, be put into a retort, to which the apparatus used in distilling the marine acid has been previously adapted, yellow vapors are abundantly disengaged, at first without the assistance of fire, and afterward by means of heat. . . . This vapor is found to consist of marine acid deprived of one of its constituent parts—namely, phlogiston (according to Scheele; but Berthollet has rendered it probable that it consists of dephlogisticated air, combined with marine acid). It attacks phlogistic bodies with great vehemence, and dissolves all the metals directly, affording the same salts as the entire acid does, but without disengaging any inflammable air." This passage will be utterly unintelligible to the common reader; and even to many a young chemist of the present day; and this for the reason that Nicholson, in stating a fact, has incorporated in his statement the exploded theory of phlogiston—a theory once universally accepted by chemists, and clung to even after the progress of discovery compelled them to suppose that phlogiston was lighter than nothing; that instead of possessing weight, as other elements did, it possessed the opposite of weight—*i.e.*, levity, as they styled it.

For such reasons as these, the use of scientific language is limited to treatises on science; while the language of common life is that used in all other writings; and this, even where the greatest accuracy is desired. The carefully written laws of the land speak of the sun's

rising and setting as familiarly as men do in common conversation. Indeed, in so far as the truth intended to be expressed is concerned, the language of common life is as accurate as the language of science. When I say the sun rises I mean to tell of a certain phenomenon—*i.e.*, a certain thing as it appears, as it is made known to my senses, and not that event in relation to its cause, as the astronomer does. For the same reasons that the language of common life is that used by all men in writing history, geography, chronology, and even the laws of the land, that language has been used, under the Divine direction, in writing the Holy Scriptures. Ignorance of this truth, so reasonable in itself, or a wilful disregard of it in interpreting the Scriptures, has been the cause of much of the conflict between scientists and divines since the revival of learning in these modern times.

§ 5. *The Author's Object in Writing.*

Bearing in mind "the incompleteness of science," the author, in the following papers, has not attempted to work out a harmony of science and revelation—that is, a work belonging to the future. What he has attempted, as the general title of the work indicates, is to collate the two books of nature and revelation; and this with the design (1) of directing the reader's attention to the points in which the latest results of scientific investigation and the statements of revelation, put on record many centuries ago, are at one; and (2) to show that, even on points in which, at present, there is apparent discrepancy, there is no necessary contradiction. Having been a student of science for half a century, and for some of the best years of his life a teacher of science also, and through all these years a devout student of Scripture, he can heartily indorse the declaration of the British

scientists, quoted in § 1—"We confidently believe that a time will come when the two records will be seen to agree in every particular."

The papers embraced in this volume have been written, and several of them given to the public, either through the press or from the platform, in the course of the last few years; but all of them have now been carefully rewritten, so as to embody the latest results of scientific research and biblical criticism, and thus a true representation of the case as it stands to-day.

II.

PRIMEVAL MAN.*

§ 6. *The Question Stated.*

How long ago, and in what Condition as to Civilization and Religion, did the Race of Man begin its Course in the World?

Until very recently the opinion entertained by those who thought upon the subject at all was, that man was created some six or seven thousand years ago,† and that he commenced his course as a civilized being, believing in the one only living and true God.

A far greater antiquity has been claimed for him by some of late years ; and we are told that man, beginning his course as a savage, has gradually raised himself through what are termed the paleolithic, the neolithic, the bronze, and the iron ages, each of which lasted for many thousands of years, until he reached the begin-

* The substance of this paper was originally delivered as a lecture at the Summer School of the American Institute of Christian Philosophy, at Key East, N. J., July 29th, 1885, and subsequently published in *Christian Thought.*

† "A world's era, dating from the creation, and constructed out of the Old Testament, was in use among the Jews at the time of Christ. The Jewish historian Josephus employs it in his work on archæology. Such an era seems to recommend itself in several respects, but its construction presents difficulties which can hardly ever be overcome. Every scholar who tries it comes to a different result. Julius Africanus counts from the creation to Christ 5500 years ; Eusebius, Bede, and the Roman Martyrologum, 5199 ; Scaliger and Calvisius, 3950 ; Kepler and Petarius, 3984 ; Usher, followed by our English Bibles, 4004."—*Schaff-Herzog's Encyclopædia, art.* "*Era.*"

nings of our modern civilization. This opinion has been supported with especial zeal by those who adopt the hypothesis of man's evolution from the brute; indeed, it would seem to be a necessary consequence of such an origin for him, even though evolution be regarded but as "a mode of creation." To an examination of the problem thus presented we will now turn our attention.

§ 7. *Advance and Degradation alike Common.*

Beginning our examination, where all examination of such a subject must begin, if we would arrive at the truth, with the present condition of man, we find him in every possible stage of civilization, from the utter savagery of the Digger Indians of North America and the Weddas of Ceylon to the advanced civilization of the English-speaking nations, who dominate the world. And comparing the present condition of the nations with what authentic history tells us it was a few centuries ago, we learn that while some nations have been steadily advancing in civilization, others have been stationary, and others, again, have retrograded. The American Encylopædia, in its article on Ethnology, written by an evolutionist and an advocate of the great antiquity of man, marks only five of the thirteen great families into which it divides the human race as advancing in civilization at the present time, while four are stationary, and the remaining four are retrograding.

An instance of retrogradation is furnished us by the aborigines of our own country. "There are abundant remains," writes Sir John Lubbock, "of a very ancient American civilization, which was marked by the construction of great public works and by the development of an agriculture founded on the maize, which is a cereal indigenous to the continent of America. This civiliza-

tion was subsequently lost, and then succeeded a period in which man relapsed into partial barbarism." ("Prehistoric Times," p. 234.)

An instance of the extreme degradation of a once highly civilized people we have in the Veddas, or Weddas, of Ceylon. Of this people Canon Rawlinson tells us that a careful study of their language proves them to be "the degenerate descendants of the Sanskrit Aryans who conquered India;" and he adds: "It is difficult to conceive of a degradation which could be more complete. The Sanskrit Aryans must, by their language and literature, have been at the time of their conquest in a fairly advanced stage of civilization. The Weddas are savages of a type than which it is scarcely possible to conceive anything more debased. Their language is limited to some few hundred vocables; they cannot count beyond two or three; they have, of course, no idea of letters; they have in a domesticated condition no animal but the dog; they have no arts beyond those of making bows and arrows, and constructing huts of a very rude kind; they are said to have no idea of God, and scarcely any memory. They with difficulty obtain a subsistence by means of the bow, and are continually dwindling, and threaten to become extinct." ("Origin of Nations," pp. 6, 7.)

In view of such facts as these—and many more of like character might be cited—the Duke of Argyll writes: "Nothing in the natural history of man can be more certain than that, both morally and intellectually and physically, he can, and he often does, sink from a higher to a lower level. This is true of man both collectively and individually, of men and of societies of men. Some regions of the world are strewn with monuments of civilizations which have passed away. Rude and

barbarous tribes stare with wonder on the remains of temples, of which they cannot conceive the purpose, and of cities which are the dens of beasts." ("Primeval Man," p. 156.) And the venerable professor of ancient history at Oxford comes to the conclusion that "savagery and civilization are the two opposite poles of our social condition, states between which men oscillate freely, passing from either to the other with almost equal ease, according to the external circumstances wherewith they are surrounded." ("Origin of Nations," p. 8.)

§ 8. *True Significance of the "Ages."*

The several ages—as they are called—of stone, bronze, iron, and a higher civilization are not, nor have they ever been, ages in the progress of the human race as a whole, but only in that of particular peoples or nations—peoples in all these stages of progress living not only at the same time, but often side by side, as did the English colonists, the Red Indians, and the Aztecs in this country two centuries ago.

Nor does the passage of a particular people through one of these ages—the Stone Age, for example—necessarily require thousands of years. Where a savage people are brought in contact with a civilized one they may pass through all these "ages" in the course of a generation or two. Such has been the case with the civilized Indians, now quietly settled in our "Indian Territory." As Dr. Southall remarks, "The Stone Age is not necessarily associated with antiquity. It is a stage of civilization, and not a measure of time." ("Recent Origin of Man," p. 388.)

Nor are these several ages always stages in the progress of a people. They may be stages in a course of degra-

dation, as was the fact, according to Sir John Lubbock, with respect to the Stone Age, in which many tribes of our North American Indians were found living, at the first settlement of the country by Europeans. The Stone Age may mark the last stage in the decadence of a once highly civilized people, as well as the first stage in the advance of a savage people toward civilization.

The assumption by the advocates of a great antiquity for man that our existing civilization is a result wrought out by the human race as a whole, through long ages, the general course being one of advance from utter savagery at its beginning, is irreconcilable with the known facts in the case. The question under examination cannot be settled by any general reasoning upon what is assumed to be the nature of man and the necessary progress in civilization, nor can it be settled by a study of the existing condition of the nations of the earth, and their history for the few centuries which authentic history covers in the case of many of them. In seeking an answer to it, we must make use of written history, so far as that is available ; and when that fails us, we must turn to the "monuments" and tradition and every trace of himself of every kind which man has left behind him in the distant past. Geology, anthropology, and archæology, as well as history, traditional, monumental, and written, have a right to be heard ; and to their testimony let us now turn our attention. The examination of each of these several kinds of testimony will be, necessarily, brief ; but not so brief, I hope, as to prevent our reaching a satisfactory conclusion.

I. The Testimony of Science.

§ 9. *The Testimony of Geology.*

On one point the testimony of geology respecting primeval man is definite and unquestionable, and that is, that man is "the latest born" of the inhabitants of our earth. From the fauna to which he belongs more than one species of animal has disappeared, but, in so far as is known, not one has been added since he came into being.

From time to time during the last half century the announcement has been made that human remains had been found in positions which demonstrated a much greater antiquity for man than had hitherto been allowed; but in every instance a more careful examination has proved this claim to be unfounded. Among the most noted of these cases are the following—viz.:

1. "*The fossil man of Guadeloupe*," for which Nott and Gliddon, in their "Types of Mankind," published in 1854, claimed a great antiquity. "There were two of these skeletons, which were found imbedded in the solid rock on the northern coast of Guadeloupe, in the West Indies. One of these is in the British Museum, and the other in the Royal Cabinet in Paris. . . . A careful study of them has led to the conclusion that they are the remains of Indians killed in battle not more than two centuries ago. The rock is a limestone, which is forming daily on that coast. . . . And the skeletons still retain some of their animal matter, and all their phosphate of lime." (Southall's "Recent Origin of Man," pp. 77, 78.)

2. *The fossil human bones found, as was reported,*

by Count Pourtales, in the coral reefs of Florida, and which Professor L. Agassiz calculated to be ten thousand years old, basing his calculations upon what he considered the rate of growth in coral reefs. Respecting this case, the *American Naturalist*, vol. 1, p. 434, contains the following statement: "In regard to the alleged discovery of human bones in the coral formation of Florida, which was first published by Professor Agassiz in Nott and Gliddon's 'Types of Mankind,' and has appeared in other works, including Lyell's 'Antiquity of Man,' we beg to give our readers the following statement, in his own words, of Count L. F. Pourtales, the original discoverer of these bones: 'The human jaw and other bones found in Florida by myself in 1848 were not in a coral formation, but in a fresh-water sandstone, on the shore of Lake Monroe, associated with fresh-water shells of species still living in the Lake (Paludina, Ampullaria, etc.). No date can be assigned to that deposit, at least from present observation.'"

3. "*The Natchez man*," as it was called—a human pelvis found in the bottom of a ravine cut through the fluviatile deposit at Natchez, Miss., which Sir Charles Lyell estimated to have an age of one hundred thousand years. On this case I remark: (1) Professor C. G. Forshey, who subsequently examined the spot where this bone was found, says: "It was probably not *in situ*, but this loam and the bone too had caved in from some point above and been washed thither. A dozen plantation burial-places and Indian mounds and camps had been exposed above for centuries. The probabilities are a hundred to one that this bone was not of the bluff formation. (2) The conclusion of Lyell respecting the age of this bone is based upon another conclusion of his, that the delta of the Mississippi has been one hundred thou-

sand years in forming. Since Lyell's estimate more accurate observations on the rate of formation of the Mississippi delta have reduced the estimate of its age to fourteen thousand two hundred years, according to Professor Hitchcock, or four thousand four hundred, according to Majors Humphreys and Abbot, United States engineers, the latest authorities on the subject."*

Such are three of the cases in which certain geologists thought for a time that they had obtained proof of a great antiquity for man—three among the most noted cases, and fair specimens, I think, of the whole class. In view of them all, my conclusion is that while geology distinctly testifies that man is the "latest born" of the living creatures inhabiting our earth, it can tell us nothing definite about the time of his birth—certainly nothing at variance with the idea that he began his course on earth not more than six or seven thousand years ago.

§ 10. *The Testimony of Anthropology.*

At one time it was claimed that certain human skulls which had been discovered, and which from the position in which they were found were regarded as the skulls

* In the Philadelphia *Presbyterian* of August 22d, 1885, I find the following: "Oftentimes we have reports that human remains have been discovered in some of the geological strata. Then we have figured out for us how old the deposit is, and how old man must be, seeing that his remains are found so deeply buried in these formations. Thousands and tens of thousands of years are claimed, and the great antiquity of man is declared to be demonstrated. The last discovery has been made in Mexico, and near the capitol. Human bones have been found in a stratum of travertine, and their antiquity has been argued." But Professor Newberry, of Columbia College, has weighed the reports, and says: "It is possible that we have in these bones the oldest record of man's occupation of the continent, but no facts have yet been brought to light which prove that the deposit containing them was not made within a thousand years."

of paleolithic men—"the Neanderthall skull," for example—demonstrated a great difference between these men and the men of the present day, and so a much greater antiquity for man than had hitherto been allowed him. A more careful and extended examination has led anthropologists to a different conclusion.

"The most ancient of all known human skulls," writes the Duke of Aygyll, "is so ample in its dimensions that it might have contained the brains of a philosopher." So conclusive is this evidence against any change whatever in the specific characters of man since the oldest human being yet known was born, that Professor Huxley pronounces it to be clearly indicated that the first traces of the primordial stock whence man has proceeded need no longer be sought by those who entertain any form of the doctrine of progressive development in the newest tertiaries; but he adds they may be looked for in an epoch more distant from the age of those tertiaries than that it is from us." ("Primeval Man," pp. 73, 74.) In explanation of the remark of Professor Huxley, quoted above, I would remind the reader that "the newest tertiaries" are the oldest strata in which human remains have as yet been found.

Professor Pfaff, of the University of Erlangen—the latest authority on this subject I have seen—after giving a tabular statement of the dimensions of a large number of very ancient skulls—paleolithic skulls, as they are called—collected in Great Britain and France,* reaches the conclusion: "We see very clearly from all this that the size of the brain of the oldest population known to us is not such as to permit us to place them on a lower

* "As these skulls are partly fragmentary, we shall best obtain figures adapted for the comparison of their contents by adding the

level than that of the now living inhabitants of the earth." And, he subsequently adds, "The brain of the ape most like man does not amount to quite a third of the brain of the lowest race of men; it is not half the size of the brain of a new-born child. The same gulf which is found to-day between man and the ape goes back with undiminished breadth and depth to the tertiary period." ("The Origin of Man," pp. 41, 51.)

§ 11. *The Testimony of Archæology.*

The testimony of archæology respecting primeval man comes from several different sources.

1. *That of the megalithic monuments and tumuli* found in various parts of the world. One of the most celebrated of these megalithic monuments is that of Stonehenge, on Salisbury Plains, Eng. When and by whom was this erected? By the Druids, probably, long ages before the conquest of Great Britain by the Romans, say some. Geoffrey of Monmouth, in his "History of Great Britain," written in the twelfth century—and he is followed in this by all subsequent chroniclers—tells us that Ambrosius, the successor of Vortigern, erected Stonehenge as a monument to three hundred British noblemen treacherously slain by Hengist about A.D. 462. In confirmation of this date, we have the facts that some of the great stones are dressed evidently with

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measures for the height, breadth, and length of the skulls; and so doing we obtain the following figures—viz.:

Average of 48 skulls of the Stone Age from England . 18.877 in.
Average of 7 skulls of the same age from Wales....18.858 in.
Average of 36 skulls of the same age from France....18.220 in.
The average of the now living European is.....18.579 in.
The average of the now living Hottentot is.....17.795 in.

—"*The Origin of Man*," p. 41.

bronze or iron tools, and that iron arrow-heads and pieces of iron armor, nearly eaten up with rust, have been dug up within its enclosure.

Mr. James Fergusson, F.R.S., who has made this a special subject of study in his "Rude Stone Monuments," published in 1872, states as his conclusion that the "Cromlechs" of Great Britain and France belong to the first centuries of the Christian era, and states that three fourths of these monuments have yielded sepulchral deposits to the explorer, and, including the "tumuli," probably nine tenths have proved to be burial-places. For the tumuli, or "mounds," as they are more commonly spoken of among us, of North and South America, no more ancient date can reasonably be claimed than for those of Europe.

2. *That of the remains of lake dwellings—i.e.*, buildings erected upon piles, which have been discovered in the course of the last thirty years in many of the lakes of Switzerland and adjacent countries. An age of six or seven thousand years has been claimed for these remains, chiefly on the ground of the rude stone implements found in them.

In considering this claim I would ask you to remark the facts: (1) That mingled with these rude stone implements, others of bronze and iron occur, together with the remains of the horse, the ox, the goat, the sheep, and the dog, all domesticated animals; and wheat, barley, and millet, in some instances roasted and stored up in jars, precisely as is now done in these same countries; and, very recently, silver coins of the eighth and tenth centuries have been dredged up from the ruins of the lake-dwellings of Lake Paladru, in southern France; (2) that pile-dwellings are delineated on Trajan's column at Rome. The date of this column is about A.D. 105, and

it was erected to commemorate the conquest of Dacia, the modern Hungary. Such dwellings have been common in many countries in ages past, and are still in use in some, being resorted to for protection against the attacks of enemies, as in Ireland, as late as 1562, or to escape the periodic floods to which the country is subject, as in Venezuela to-day.

3. *That of the Danish Kjökken-moddings, or shell-mounds.* A great antiquity is claimed for these shell mounds on the ground of the rude character of the stone implements found in them—metal implements being entirely wanting in many of them—and the presence of bones of animals now extinct.

Shell-mounds similar in character to those of Denmark are to be found along the coast of many countries. On our own coast they are of frequent occurrence all the way from Nova Scotia to Florida. Those of our country are confessedly of Indian origin. Knowing the history of the early settlement of this country by Europeans, what would we naturally expect to find true respecting these shell-mounds which the Indians have left behind them? I answer: (1) In the lower strata, or the older mounds, rude stone (paleolithic) implements alone; (2) in the upper strata and the newer mounds, formed after the arrival of European settlers, the same rude stone implements, mingled with copper ornaments and iron hatchets; and this is just what we do find. Is it strange, then, that two thousand years ago, when the natives of Denmark stood to the civilized Romans in very much the same relation that our Indians did to civilized Europeans two hundred and fifty years ago, that the same things should be found true of the shell-mounds they left behind them?

The truth is, "The whole argument which has been

founded on flint implements," as the Duke of Argyll well says, "is liable to these two fundamental objections: (1) That flint implements are a very uncertain index of civilization, even among the tribes who use them; and (2) that they are no index at all of the state of civilization of other tribes who lived at the same time in other portions of the globe. The finding of flint implements, for example, however rude, in England or Denmark or France, affords no evidence whatever of the condition of the industrial arts in the same age upon the banks of the Euphrates or the Nile." ("Primeval Man," p. 184.)

4. *That of the "bone-caves" of Europe*, in which the bones of man are found mingled with those of the cave-bear, the cave-hyena, the mammoth, the woolly elephant, the hippopotamus, and the reindeer—animals now extinct, or else no longer inhabitants of the countries in which these caves occur.

If man was the contemporary of these animals—and the mingling of his bones with theirs in the same caves would seem to place this beyond reasonable doubt—the question presents itself, How long ago is it that these animals inhabited Central Europe? and when did they cease to exist, if they have disappeared altogether? (1) The cave-bear and cave-hyena, once thought to be extinct species of these animals, and so very ancient, more careful examination has shown to be identical with the species now living; (2) the reindeer, now confined to Northern Europe, Cæsar and Sallust both tell us, was common in Gaul (France) and Germany in their day; (3) the remains of the woolly elephant occur in great abundance in Siberia, in some instances with the flesh in such a condition as to be eaten by dogs; (4) the remains of the mammoth are found in surface deposits and peat

swamps—*e.g.*, in the Dismal Swamp of Virginia—with the bones retaining a large portion of their animal matter, thus proving their comparatively recent extinction. In confirmation of this, in the "Smithsonian Contributions to Knowledge," vol. 3, p. 142, we are told that among the North American Indians there are native legends which indicate a traditional knowledge of more than one of these extinct animals, among them the mastodon or mammoth. Now, whether we do or do not adopt the supposition of Dr. Southall, that these human bones found in the bone-caves of Europe are those of "the first race which reached Western Europe from Western Asia, and were subsequently pushed further north by the Celts," this much, I think, is certainly true, that there is nothing in the known facts of the case which demands for them an antiquity greater than four thousand or five thousand years.

§ 12. *Conclusion from the Testimony of Science.*

The reader has now before him a statement of all the important facts of geology, anthropology, and archæology bearing upon the question of primeval man. It is brief, but I have tried to make it a fair statement. To any who may wish to pursue the subject further, I would recommend Dr. James C. Southall's "Recent Origin of Man," a work which contains the most full and thorough discussion of the whole subject I know of in the English language. This testimony of science does not settle the question respecting the age and condition of primeval man; and certainly it furnishes no authority for such statements as that of Clodd—"Man was once wild and rough and savage, frightened at his own shadow, and still more frightened at the roar of the thunder and the quiver of the lightning, which he

thought were the clappings of the wings and the flashings of the eyes of the angry Spirit, as he came flying from the sun ; and that it has taken many thousands of years for man to become as wise and skilful as we now see him." (Clodd's "Childhood of the World," p. 2.)

II. The Testimony of History.

§ 13. "*The Cradle of the Human Race.*"

The unity of the human race, a point respecting which there was at one time much difference of opinion, may now be regarded as a settled question. Professor Huxley writes: "I cannot see any good ground whatever, or even any tenable sort of evidence, for believing that there is more than one species of man." ("Origin of Species," Lecture V.) And the Duke of Argyll: "On this point, therefore, of the unity of man's origin, those who bow to the authority of the most ancient and the most venerable traditions, and those who accept the most imposing and the most popular of modern scientific theories, are found standing on common ground, and accepting the same result." ("Unity of Nature," p. 399.)

Where did the human race begin its course? On this point, as well as that of the unity of the race, scholars are pretty well agreed.

The country known to us, in part, as Armenia—the elevated region in which the Euphrates, the Tigris, and the Indus have their head-waters—is regarded as the cradle of the human race ; and this, among other reasons, because the most ancient traditions all point to this as man's starting-point, because this is the native country of the cereals which have furnished food for man

the world over, and because ethnological investigations all lead to the same conclusion. It is here, and clustering around this as a centre, we find the oldest nations, the only ones that have a history reaching back into the long past—*e.g.*, the Chinese, the Indians, the Persians, the Assyrians, the Jews, the Phœnicians, the Greeks, and the Egyptians.

§ 14. *The Antiquity of the Nations of Western Asia.*

It would be impossible within the limits of a brief discussion like this to give any statement in detail of the claims to antiquity of these several peoples. Instead thereof I will ask the reader's attention to the conclusions of Canon Rawlinson, stated at large, with his reasons for them, in his "Seven Great Monarchies," and, in brief, in his later work, "The Origin of Nations." He writes: "Exaggerated chronologies are common to a large number of nations; but critical examination has—at any rate, in all cases but one—demonstrated their fallacy; and the many myriads of years postulated for their past civilization and history by the Babylonians and Assyrians, the Hindoos, the Chinese, and others, has been shown to be purely fiction, utterly unworthy of belief, and not even requiring any very elaborate refutation. Cuneiform scholars confidently place the beginning of Babylon about B.C. 2300; of Assyria, about B.C. 1500; of India, about B.C. 1200. Chinese investigators can find nothing solid or substantial in the past of the "Celestials" earlier than B.C. 781, or, at the farthest, B.C. 1154. For Phœnicia the date assigned by the latest English investigator is sixteen or seventeen centuries B.C. . . . A concensus of savants and scholars almost unparalleled limits the past history of civilized man to a date removed from our own time by less than four thousand four hundred years, ex-

cepting in a single instance. There remains one country, one civilization, with respect to which the learned are at variance, there being writers of high repute who place the dawn of Egyptian civilization about B.C. 2700, or only four centuries before that of Babylon, while there are others who postulate for it an antiquity exceeding this about two thousand four hundred years." ("Origin of Nations," pp. 147–149.)

§ 15. *The Antiquity of Egypt.*

On what is this claim for so great antiquity for Egyptian civilization based? Not on any direct monumental testimony, although certain writers speak as if it was upon such testimony, at least in part, the claim rested. On this point Rawlinson writes: "Nothing is more certain, nothing more universally admitted by Egyptologists, than the absence from the monuments of any continued chronology." ("Origin of Nations," p. 152.) And in support of this statement he quotes the authority of some of the most eminent scholars of the day.*

Professor Owen, the ablest advocate of the great antiquity of Egyptian civilization, rests its claim to acceptance mainly on the testimony of Manetho, an Egyptian

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* Stuart Pool says the evidence of the monuments with regard to chronology is neither full nor explicit. ("Dictionary of the Bible," vol. 1, p. 505.) Bunsen: "History is not to be elicited from the monuments; not even its framework, chronology." ("Egypt's Place," vol. 1, p. 32.) Brugsch: "It is not till the commencement of the twenty-sixth dynasty that the chronology is founded upon dates not much wanting in exactness." ("Histoire d'Egypt," p. 25.) Mariette and Lenormant: "The greatest obstacle to the establishment of a regular Egyptian chronology is the circumstance that the Egyptians themselves never had any chronology at all." ("Manuel d'Histoire Ancienne," vol. 1, p. 332; Rawlinson's "Origin of Nations," p. 152.)

priest who lived and wrote near the middle of the third century before Christ. Unfortunately for us, the original "History of Egypt," by Manetho, has been lost, and we have nothing more than fragments of it, preserved in the writings of Eusebius and Sincellus, together with a few quotations by Josephus.

Respecting Manetho's dynasties of Egyptian kings, it is worthy of remark: (1) That the earliest dynasties are rejected by all as fabulous. Of this character are his dynasties of the gods, covering a period of thirteen thousand nine hundred years, and those of the Manes and Heroes, covering five thousand eight hundred and thirteen years more; and so the antiquity of Egyptian civilization, as given by Manetho, is curtailed nearly twenty thousand years by common consent. (2) The statements of Eusebius and Sincellus, each professing to give Manetho's numbers, often differ as to the length of the same dynasty, admitted to be genuine, in one instance as much as three hundred years. (3) Manetho states that Egypt, throughout a large part of its history, was divided into three kingdoms: Upper, Middle, and Lower Egypt; and there is abundant proof from other quarters that such was the fact; and, if so, it seems fair to conclude that some of his dynasties were contemporary. As to which, and how many of them were contemporary, Egyptologists are not agreed. In view of all these facts, it must be admitted that anything like a definite determination of the antiquity of Egyptian civilization, on the authority of Manetho's dynasties, is out of the question.

Can we get any light on this perplexing question from the monuments? A peculiarity in the construction of the Great Pyramid, confessedly one of the oldest, if not the very oldest, of Egyptian monuments, is thought by

some to give us the date of its erection. This pyramid is admirably oriented, and, of course, one of its sides faces due north. In this north side is the entrance, the long entrance passage being in the exact plane of the meridian—not horizontal—not pointing to the true pole, which would require an elevation of 30°, the latitude of the pyramid, but at an angle of 26° 27′, according to the careful determination of Piazzi Smith, Astronomer Royal of Scotland. Colonel Howard Vise, who, forty-five years ago, spent months in the study of this pyramid, was impressed with this peculiarity, and thinking it possible that this passage pointed to what was the pole-star at the time of its erection, he communicated this idea to Sir John Herschel, with the request that he would determine for him whether or not there ever was a pole-star which occupied just the position indicated, and which might have served as a guide to the pyramid-builders; and if there was, what star? and when did it occupy that position? As changes in the pole-star are dependent upon the "precession of the equinoxes," and the rate of that precession has been determined, these questions were not difficult to answer. Sir John Herschel determined that the star Alpha Draconis, one of the brightest stars in the northern circumpolar regions, was once pole-star, and occupied the very position indicated at two points in the past—viz., B.C. 2123 and B.C. 3400. For reasons which it is not necessary I should state here, the first of these dates was accepted by Colonel Vise; and for a time the date of the erection of the Great Pyramid was generally considered settled; and, for myself, I must say I have seen no good reason given for setting aside this settlement. This pyramid, as the quarry-marks upon many of its blocks of stone show, was built during the reign of Cheops; and, ac-

cording to Manetho's dynasties, not more than two or three centuries could have intervened between Cheops' reign and that of Menes, universally regarded as the founder of the Egyptian monarchy. Thus, in the date of the building of the Great Pyramid we have Canon Rawlinson's determination of the antiquity of Egyptian civilization—viz., about B.C. 2600 years—strikingly confirmed.

The pyramid period falls very early in Egyptian history, and yet its civilization would seem to have been as perfect as at any later period. Sir G. Wilkinson writes: "The scenes depicted in the tombs of this epoch show that the Egyptians had already the same arts and habits as in after times, and the hieroglyphics in the Great Pyramid prove that writing had been long in use. We see no primitive mode of life in Egypt, no barbarous customs, not even the habit, so slowly abandoned by all people, of wearing arms when not on military service, nor any archaic art." (Rawlinson's "Herodotus," vol. 2, p. 291.) If to all this we add the architectural skill exhibited in fixing the casing stones of the pyramid, and in polishing the marble linings of the several passages, and, more especially, the red granite linings of what is called the King's Chamber, we cannot but form a high idea of Egyptian civilization at that period. In view of such facts as these, M. Rénan exclaims: "When we think of this civilization, that it had no known infancy; that this art, of which there remain innumerable monuments, had no archaic period; that the Egypt of Cheops and Cephron is superior, in a sense, to all that followed, *on est pris de vertige.*" (Quoted in Smith's "Great Pyramid," vol. 3, p. 371.)

Admitting the truth of all that has been said about the advanced civilization of the Pyramid period, and that

we cannot, on the authority of authentic history, carry back its date much further than Canon Rawlinson has done, Professor Owen contends for the addition of some two thousand years, on the ground that "sober experience teaches that arts, language, and literature are of slow growth, the result of gradual development; . . . that of all the marvels of this history, the manifestation of the dawn of civilization by such works, agreeably with the conceptions of Canon Rawlinson, would be the greatest. The birth of Pallas from the brain of Jove would be its parallel." (Appendix to the "Origin of Nations," p. 259.) This argument of Professor Owen—and I have given it in his own words—is simply a "begging of the question" at issue. A parallel to the birth of Pallas from the brain of Jove is just what those who hold that the human race began its course in a civilized condition contend for. As to the civilization of Egypt, they hold that the Egyptians were not autochthanes, nor did their civilization dawn in the Valley of the Nile. Like the Anglo-Saxon race in our own country, they were immigrants, the offshoot of a civilized people, and in their settlement of Egypt they brought with them the civilization of the country from which they came, as our forefathers did.

This view of matters is confirmed by all we know of the history of their religion. Piazzi Smith tells us that "the pyramids generally are without idolatrous decorations or contents." ("The Great Pyramid," vol. 3, p. 518.) A very remarkable fact is this, when their later built temples and tombs are more thickly covered with marks of idolatry than those of any other people. M. Renouf writes: "It is incontestably true that the sublimest portions of the Egyptian religion are not the comparatively late results of a process of development or

elimination from the grosser. The sublimest portions are demonstrably ancient; and the last stage of the Egyptian religion—that known to the Greek and Latin writers—was by far the grossest and most corrupt." ("Hibbert Lectures," p. 119.)

By means of authentic records, written and monumental, we have traced back the history of man about four thousand five hundred years. Beyond this date we have certain traditions, more or less universal, that furnish some light to guide us. To three of these—the three most ancient—we will now turn our attention.

§ 16. *Tradition Respecting the Confusion of Tongues.*

This story of the "Tower of Tongues," writes Lenormant, "was among the most ancient recollections of the Chaldeans, and was one of the national traditions of the Armenians, who had received it from the civilized nations inhabiting the Tigro-Euphrates basin." ("Ancient History of the East," p. 22.)

Berosus gives the tradition in the following form—viz.: "They say that the first inhabitants of the earth, glorying in their own strength and size, and despising the gods, undertook to raise a tower whose top should reach the sky, in the place in which Babylon now stands; but when it approached the heavens, the winds assisted the gods, and overthrew the work upon its contrivers, and its ruins are said to be still in Babylon; and the gods introduced a diversity of tongues among men, who till that time had all spoken the same language; and a war arose between Chronus and Titan. The place in which they built the tower is now called Babylon, on account of the confusion of tongues, for confusion is by the Hebrews called Babel." (Cory's "Ancient Fragments," p. 34.) This tradition in an earlier form has

recently been discovered inscribed on one of the Assyrian tablets in the British Museum, and a translation of it is given in "The Records of the Past," vol. 7, pp. 129–132.

§ 17. *Tradition of the Flood.*

"The one tradition," writes Lenormant, "which is really universal among those bearing on the history of primeval man, is that of the deluge. . . . Of all traditions relative to the deluge, by far the most curious is that of the Chaldeans, made known to the Greeks by Berosus." ("Ancient History of the East," pp. 13,14.)

This tradition, as given by Berosus, is as follows—viz.: "In the time of Xisuthrus happened a great deluge, the history of which is thus described: The deity Chronus appeared to him in a vision, and warned him that upon the 15th day of the month Sivan there would be a flood by which mankind would be destroyed. He therefore enjoined him to write a history of the beginning, procedure, and course of all things, and to bury it in the City of the Sun at Sippora, and to build a vessel, and to take with him into it his friends and relations, and convey on board everything necessary to sustain life, together with all the different animals, both birds and quadrupeds, and to trust himself fearlessly to the deep. Having asked the deity whither he was to sail, he was answered, 'To the gods;' upon which he offered up a prayer for the good of mankind. He then built a vessel five stadia in length and two in breadth. Into this he put everything he had prepared, and last of all conveyed into it his wife, his children, and his friends. After the flood had been upon the earth, and was in time abated, Xisuthrus sent out birds from the vessel, which, not finding any food, nor any place whereupon they might rest their feet, returned to him again. After an interval of

some days he sent them forth a second time, and they now returned with their feet tinged with mud. He made a trial the third time with these birds, but they returned no more, from whence he judged that the surface of the earth had appeared above the waters. He therefore made an opening in the vessel, and upon looking out found that it was stranded upon the side of some mountain, upon which he immediately quitted it, with his wife, his daughter, and the pilot. Xisuthrus then paid his adoration to the earth ; and having constructed an altar, offered sacrifice to the gods." (Cory's "Ancient Fragments," p. 26.) This tradition in an earlier form, like that of the "Tower of Tongues," has recently been discovered among the Assyrian tablets in the British Museum, and a translation of it is given in "The Records of the Past," vol. 7, pp. 133–149.

§ 18. *Tradition of a Golden Age.*

"The traditions of almost all nations," writes Canon Rawlinson, "place at the beginning of human history a time of happiness and perfection, 'a golden age,' which has no features of savagery or barbarism, but many of civilization and refinement. In the Zendavesta, the first Assyrian king, after reigning for a time in the original *Aryanem vaejo*, removes with his subjects to a secluded spot, where both he and they enjoy uninterrupted happiness. In this place was neither overbearing nor meanspiritedness, neither stupidity nor violence, neither poverty nor deceit, neither puniness nor deformity, neither huge teeth nor bodies beyond the usual measure. The inhabitants suffered no defilement from the evil spirit. They dwelt amid odoriferous trees and golden pillars ; their cattle were the largest, best, and most beautiful on earth ; they were themselves a tall and beau-

tiful race ; their food was ambrosial, and never failed them." ("Origin of Nations," p. 11.)

The Egyptian dynasties, according to Manetho, commenced with a reign of the gods, which lasted for thirteen thousand nine hundred years ; and it would be in violation of all our notions of the fit and the proper to think of the gods as reigning over a race of savages—over any other than a happy people. The Chinese historians tell of an age of innocence, when the whole creation enjoyed a state of happiness ; when everything was good, all being perfect in their kind. "The Greeks and Romans believed in a golden age under the rule of Saturn ; and many of their poets—as, for example, Hesiod, in his 'Works and Days,' Aratus, Ovid, and, above all, Virgil, in the first book of the Georgics—have turned this poetic material to admirable account, and defined the gradual decadence of the world, as the silver, the brass, and the iron ages, holding out at the same time the consolatory hope that the pristine state of things will one day return." (Chambers's Encyclopædia, art. Golden Age.)

As already remarked, in the light of authentic history, written and monumental, we can trace back the history of man some four thousand five hundred years ; and, I now add, under the guidance of tradition we can go back, possibly, one thousand or two thousand years more ; and there we seem to reach his beginning, to come upon primeval man as he is starting upon his course ;* and we

* In Pusey's "Daniel," recently republished in this country, I find the following statement—viz.: "The known population of the world is much what it would be, according to recognized rules of the increase of our race, dating from the received chronology of Noah, and starting with six persons. Rough as such calculations must be, they wholly exclude the fabulous unbroken antiquity which some

find him, not the ignorant, brutal savage, destitute of all religion, which some would have us believe primeval man to have been, but man enjoying his golden age, under the immediate government of the gods, and in happy communion with them; and true science testifies to nothing at variance with this. I may be told that this conclusion is out of harmony with the hypothesis of the evolution of man from the brute. If this be so, all I have to say is, the worse, then, for the hypothesis of evolution. At best "an unproved hypothesis," to use the words of Virchow, it cannot be accounted an integral part of true science. True science is built up of facts, not fancies.

III. The Testimony of Moses.

§ 19. *Manetho, Berosus, and Moses Compared.*

Thus far we have sought to answer the questions, When? And in what condition did the human race begin its course?—from sources admitted by all to be worthy of credit, and to which all are accustomed to refer when discussing this subject. I have purposely said nothing of that wonderful ancient history preserved for us by the Jews, which claims to have been written more than a thousand years before Manetho or Berosus was born—the Pentateuch, or Five Books of Moses.

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claim for the human race." And in a note he adds: "It is calculated by M. Faa de Bruns, one of the most distinguished scholars of Cauchy, now Professor at Turin, that, starting from the received chronology of the flood, B.C. 2348, and taking as the annual increase $_2\frac{1}{2}{}_7$, a number not far from that which represents the annual increase of the population of France, you would light on the net number of the population of the earth, 1,400,000,000." (Pusey's "Daniel," preface, p. xv.)

The testimony of Moses is studiously ignored by most of those who contend for a great antiquity and a savage origin for man; and if I should attempt to state their objection to him, just as I believe it lies in their own minds, I would do it in some such words as these: Moses was a priest, and the Pentateuch was written in the interest of the religion which he taught; and priest-craft, whether it presents itself in the form of duties enjoined or lessons taught, is not to be trusted.

"Moses was a priest." This is not the exact truth; his brother Aaron was the priest; but let that pass. And who was Berosus? A priest. And he tells us expressly that the substance of his history was derived from the temple records of Babylon. And who was Manetho? A priest. And he too professes to derive his information from the temple records and priestly traditions of Egypt. If, then, we accept the testimony of the two priests—Berosus and Manetho—how can we, with any show of reason, reject that of Moses on the ground of his priestly character? The truth is, in those early ages in the East, as in Great Britain five hundred years ago, education was almost entirely confined to the priesthood. Sir Walter Scott is true to history when he makes a leading nobleman of Scotland of that age say:

> "At first in heart it liked me ill,
> When the King praised his clerkly skill;
> Thanks to St. Bote'n, son of mine
> Save Gowan, ne'er could pen a line."

It would be just as reasonable to discredit the histories of the Venerable Bede, or Lingard, because of the priestly character of their authors, as to discredit the writings of Berosus or Manetho or Moses on such grounds.

"Moses wrote in the interest of religion, and the Pentateuch has a religious tone throughout." True; and

the same is true of the writings of Manetho and Berosus. Of Manetho's writings we have but little besides his "Dynasties of the Kings of Egypt;" but this begins with "the reign of the gods." Of the religious tone of the writings of Berosus, the traditions which he has preserved for us of the "Tower of Tongues," and "The Flood," already quoted, furnish an illustration. The cuneiform inscriptions of the Tigro-Euphrates valley, the only writings of an antiquity approaching that of the Pentateuch, are all profoundly religious in their tone. As a proof of this, take a brief extract from the celebrated Behistun inscription, as translated by Oppert. "And Darius the king says: These are the princes which call themselves mine. By the grace of Ormazd, to me they made subjection, brought tribute to me, what was ordered by me unto them, in the night-time as well as in the day-time, that they executed. And Darius the king says: In these provinces the man who was my friend I cherished him; the man who was my enemy I punished him thoroughly. By the grace of Ormazd, in these lands was my law observed; and what was ordered by me unto them, that they executed. And Darius the king says: Ormazd gave to me this kingdom, and Ormazd was my helper until I gained this kingdom, and by the grace of Ormazd I possess this kingdom." ("Records of the Past," vol. 7, pp. 88, 89.)

In the thoroughly religious tone of their writings, Manetho, Berosus, Moses, and the cuneiform inscriptions are all alike, the only difference being that the religion which appears in Moses' writings is a religion of a confessedly higher type—inasmuch as it recognizes one God only—than the Egyptian animal worship of Manetho or the Parseeism of Nineveh and Babylon. Did the Pentateuch lack this religious tone, it would be out of har-

mony with all other writings of the age in which it claims to have been written ; and to object to it on this ground simply exposes the ignorance of the objector.

In addition to this, I would ask you to notice the facts : (1) That we have the original work of Moses in the language in which it was first written, as well as in several ancient translations, preserved with religious care by the Jews ; while of the writings of Manetho and Berosus we have but fragments, preserved by later writers. (2) That the Pentateuch is, in large measure, a record of what took place in Moses' day—is contemporary history—while the histories of Manetho and Berosus, who lived during the third century before Christ, are altogether histories of what must have been to them the long-passed. If they had tradition and the temple records to help them, so had Moses tradition, and, as is inferred from a critical examination of his writings by our ablest scholars, certain written documents, which had come down to him from an earlier age. Possibly it is to these documents the Chaldean tradition of the Deluge refers, when it tells us that "the Deity appeared to Xisuthrus (the Noah of Moses), and enjoined him to write a history of the beginning, the procedure, and course of all things," and to take measures to preserve it for the instruction of after ages. (3) If the writings of Manetho and Berosus are confirmed at many points by the monuments of Egypt and the Tigro-Euphrates valley, so are the writings of Moses,* and, in one particular—in the greatest event in the history of Israel which it records—the Exodus from

* The reader who wishes to follow up this subject can consult Hengstenberg's "Egypt and the Books of Moses," and Rawlinson's "Egypt and Babylon."

Egyptian bondage—the history of Moses is confirmed in a way in which no other ancient history is. In commemoration of that event, and of the means by which the pride of Egypt was broken and Israel set free, a solemn feast was instituted — the Passover — which is observed by the Jews to-day, scattered though they be all over the world, and which has been observed by them from the day of its institution — a monument this, standing forth amid the ages solitary and alone, as lasting as the pyramids and more certain in its testimony; for while the purpose for which the Great Pyramid was erected is a matter in dispute among the learned, but one interpretation has ever been given to the Passover, the presiding officer at the feast to-day repeating, as he did three thousand five hundred years ago—"It is the sacrifice of the Lord's Passover, who passed over the houses of the children of Israel in Egypt, when he smote the Egyptians, and delivered our houses." (Exodus 12 : 27.)

In view of such facts as these, I ask, How can we, with any show of reason, accept the writings of Manetho and Berosus as credible and reject those of Moses? I have said nothing of Moses' claim to inspiration, nor do I mean on the present occasion to advance that claim. I wish to discuss the question before us on grounds admitted by all to be legitimate. All I claim for Moses is, that he shall be treated fairly—treated just as Manetho and Berosus are, and so treated, I believe his claim to credibility can be more satisfactorily established than that of any other ancient historian whose writings have come down to us; and so, in the words of Lenormant, "They should, in sound criticism, form the basis of all history." ("Manual of Ancient History," p. 1.)

§ 20. *Further Proof of the Credibility of the Pentateuch.*

Taking the Pentateuch as our guide, at the point at which all other written history fails us, we will be able to trace back the race of man to its beginning. As we start in this attempt, I will ask you to remark that:

(1) At the point at which we start, Moses' history is in perfect harmony with all other credible histories in the representation which it gives of the then existing state of things. There are great civilized nations dwelling in the Tigro-Euphrates and Nile valleys, their people living in walled cities, as well as in the open country, and carrying on trade, and making wars one with another; that emigration is going on, and has been going on for years, from the great centres of population, and so Egypt and Chaldea are surrounded by lesser tribes, who, under the influence of their less favorable environments, have lost something of the civilization they once possessed; and that a gross idolatry seems to be supplanting the purer worship of one God which had prevailed, notably in Egypt.

(2) As we proceed back to the beginning, with Moses' writings in our hands, we gather up and incorporate into a history which possesses philosophic unity all the fragments preserved in the most ancient traditions, such as "the Tower of Tongues," "the Deluge," and "the Golden Age." Lenormant writes: "The Pentateuch contains the most ancient tradition as to the first days of the human race, the only one which has not been disfigured by the introduction of fantastic myths of disordered imaginations run wild. The chief features of that tradition, which was originally common to all mankind, and which the special care of Providence has preserved in greater purity among the chosen people than

among other races, are preserved, though changed, in countries distant from each other, and whose inhabitants have had no communication for thousands of years. The only clew which can guide us through the labyrinth of these scattered fragments of tradition is the Bible." ("Manual of Ancient History," p. 1.)

§ 21. *Civilization of Primeval Man according to the Pentateuch.*

The condition of primeval man is described by Moses in the words—"God created man in His own image, in the image of God created He him; male and female created He them." (Gen. 1 : 27.) "And the Lord God planted a garden eastward in Eden; and there He put the man whom He had formed. And out of the ground made the Lord God to grow every tree that is pleasant to the sight, and good for food. And the Lord God took the man, and put him into the garden of Eden to dress it and to keep it." (Gen. 2 : 8, 9, 15.) "And Adam gave names to all cattle, and to the fowl of the air, and to every beast of the field. And . . . the Lord God . . . brought the woman unto the man. And Adam said, This is now bone of my bones, and flesh of my flesh : she shall be called Woman, because she was taken out of man. Therefore shall a man leave father and mother, and shall cleave unto his wife : and they shall be one flesh." (Gen. 2 : 20, 22–24.) "And God blessed them, and God said unto them, Be fruitful, and multiply, and replenish the earth, and subdue it : and have dominion over the fish of the sea, and over the fowl of the air, and over every living thing that moveth upon the earth." (Gen. 1 : 28.)

The sketch thus given us of primeval man is a sketch in outline only, but it is complete enough to place

beyond all reasonable question the fact that he was no savage, just emerging as to body and mind from the condition of a brute, living in damp caves, and feeding upon the raw flesh of such animals as he was able to entrap or master in open fight—"the cave man," as he has been called. The nearest approach to such a man our world has presented is the Patagonian, and that in these closing years of this nineteenth century. Primeval man, as depicted by Moses, is a being bearing the image of God; cultivating the fruitful earth which, in response to his labor, yielded an abundant return of all that was good for food; possessed of a language copious enough to give name to every living thing; subduing the earth, and having the marriage relation established in all the sacredness which belongs to it among the most civilized nations of our day—a most significant particular in Moses' sketch, when we consider that "one of the most general characteristics of the savage is to despise and degrade the female sex." (Malthus on "Population," vol. 1, p. 39.)

All these things, I may be told, do not constitute civilization, in the accepted signification of that word. An extended knowledge of the useful arts, and the possession of such a settled system of laws and government as enable men to live in great political communities, are essential features of civilization. This is true of civilization as the term is applied to peoples and nations, and in this sense civilization was impossible for man at the commencement of his course, impossible until he had multiplied greatly in the earth, impossible for a century or two. Such a civilization in its living germ is all that can possibly be predicated of primeval man; and in the particulars which Moses has given us, we have this civilization in its living germ, and that a civilization of a higher type than that of Egypt, with her pyramids and

temples, built by slaves working under the lash of their taskmasters; or that of Rome, with her triumphal arches adorned with sculptures of chained captives, and her colosseum erected for popular shows of mortal combat between gladiators and wild beasts.

§ 22. *Religion of Primeval Man according to the Pentateuch.*

Turning now to what the Pentateuch tells us of the religion of primeval man, I will direct your attention to one passage only—"And in process of time it came to pass that Cain brought of the fruit of the ground an offering unto the Lord. And Abel, he also brought of the firstlings of his flock, and of the fat thereof. And the Lord had respect unto Abel and unto his offering. But unto Cain and his offering he had not respect." (Gen. 4: 3–5.) As throwing light upon the significance of this passage, one of the most learned of the Jews wrote eighteen hundred years ago: "By faith Abel offered unto God a more acceptable sacrifice than Cain." We have here, then, Abel by bloody sacrifice, which he offered in faith, the representative of what is distinctively styled "evangelical religion;" and Cain, by his offering the fruit of the ground, the representative of what is distinctively styled "natural religion;" neither of them the religion of the savage, but the two great phases of religious thought and belief common among the most highly civilized peoples of our day.

Canon Rawlinson, in the "concluding remarks" of his "Religions of the Ancient World," writes: "The historic review which has been here made lends no support to the theory that there is a uniform growth and progress of religions from fetishism to polytheism, from polytheism to monotheism, and from monotheism to posi-

tivism, as maintained by the followers of Comte. None of the religions here described shows any signs of having been developed out of fetishism, unless it be the Shamanism of the Etruscans. In most of them the monotheistic idea is most prominent *at the first*, and gradually becomes obscured, and gives way before a polytheistic corruption. In all there is one element, at least, which appears to be traditional—viz., sacrifice, for it can scarcely have been by the exercise of his reason that man came so generally to believe that the superior powers, whatever they were, would be pleased by the violent death of one or more of their creatures."

"Altogether, the theory to which the facts appear on the whole to point is the existence of a primitive religion, communicated to man from without, whereof Monotheism and expiatory sacrifice were parts, and the gradual clouding over of this primitive revelation everywhere, unless it were among the Hebrews. Even among them a worship of Teraphim crept in (Gen. 31 : 19–35), together with other corruptions (Josh. 24 : 14); and the terrors of Sinai were needed to clear away polytheistic accretions. Elsewhere degeneration had free play. . . . The cloud was darker and thicker in some places than in others. There were, perhaps, races with whom the whole of the past became a *tabula rasa*, and all traditional knowledge being lost, religion was evolved afresh out of the inner consciousness. There were others which lost a portion, without losing the whole of their inherited knowledge. There were others again who lost scarcely anything, but hid up the truth in mystic language and strange symbolism. The only theory which accounts for all the facts—for the unity as well as the diversity of ancient religions—is that of a primeval revelation, variously corrupted through the manifold and

multiform deterioration of human nature in different races and places." (Humboldt Library, No. 62, p. 92.)

§ 23. *Conclusions.*

In view of all the facts of the case—and the reader may rest assured that no important fact bearing upon the question at issue has been intentionally omitted—the conclusion to which we come is, that no sufficient reason, either scientific or historical, has as yet been given for abandoning what has been hitherto the almost universal faith, not of Christian peoples alone, but of the more enlightened heathen also, as manifested in their traditions —*that man was created some six or seven thousand years ago, and that he commenced his course as a civilized being, believing in the one only living and true God.*

III.

EVOLUTION.*

§ 24. *Changes in Inorganic Nature.*

Our world is all the time undergoing change, in some part or other, through the agency of heat and frost, storms of wind and rain, river currents and floods, volcanoes and earthquakes, gradual elevations or depressions of large districts of country, and the operation of coral polyps in building up reefs, and stone-boring mollusks and ocean waves in tearing these reefs to pieces again. And judging from appearances, as well as by reasoning upon the nature of the agencies themselves, these changes have been going on for ages, and must have been far more extensive in early times than in our day. By volcanic and earthquake agency, a little more than a year ago, mountains were thrown up, and a large district of level country sunk in the ocean in the neighborhood of the Island of Sumatra. On our own coast, at Nag's Head, the winds have piled up the sand-hill from which the place takes its name, where was an inlet from the ocean to the Sound less than a century ago. These are instances of this class of changes of recent occurrences. The only general truth, or law, respecting them demanding attention in the present discussion is that from the very nature of the agencies by which they

* The substance of this paper was originally delivered as two lectures, in Norfolk, Va., during October, 1854, and subsequently published in pamphlet form.

are effected these changes must be confined to inorganic nature. It is the world, in the narrower sense of the word alone, which can be directly affected by them.

The series of changes of this kind which our world is believed to have undergone, while they constitute a development of that world—an evolution, in the etymological sense of the word, and are sometimes spoken of as cosmical evolution, they have nothing to do with evolution in the sense in which Darwin uses the word—"descent with modifications"—they are not embraced in the evolution I propose to discuss in the present paper.

§ 25. *Changes which Constitute Growth.*

By a series of changes and variations, the acorn develops into an oak, the egg into a full-grown fowl. The mature being—the oak—is very unlike the organism from which it sprung; and yet no one who has watched this growth-development can doubt for a moment the identity of the oak with the acorn. In some instances the variations which constitute growth-development are very great and very remarkable—*e.g.*, the silk-worm appears at first as a small oval egg. This hatches, as we say, and instead of the egg we have a naked green caterpillar, with the regular perpendicular insect mouth, and feeding upon leaves. When this caterpillar has attained its growth, it fashions for itself a curious case called a cocoon, and enclosing itself therein, is transformed into a chrysalis; and then, after remaining for a season in a dormant state, it comes forth a winged moth, with the structure of its mouth so changed that it can no longer feed upon leaves as it once did, but must have liquid food, such as honey; and furnished with perfect wings, its companionship is no longer with worms, but with birds of the air. No less remarkable are the variations in the growth-develop-

ment of the frog. It is first known to us as an egg. This hatches into a tadpole, an animal destitute of limbs, and propelling itself through the water, and breathing through gills, as fishes do. After a season its gills disappear, its tail is absorbed, articulate limbs grow, and it becomes a land-animal, breathing the air, and incapable of living in the water as it once did.

Still more remarkable, in some particulars at the least, are the changes which mark the growth-development of certain parasites. Of the common tape-worm, Dr. Andrew Wilson, in his "Facts and Fictions of Zoology," tells us that "it begins life as a minute body, set free from its coverings and investments, and provided with a special boring apparatus, consisting of six hooks. This little creature will perish unless it can gain access to the body of some warm-blooded quadruped; and the pig accordingly appears on the scene as the most convenient host for the reception of the little embryo. But within the body of the pig there is not the slightest possibility of the little embryo becoming a tape-worm. The pig has merely to perform the part of an unconscious nurse, and to prepare its guest for a yet higher stage of existence. Being swallowed by the pig, the young parasite bores its way through the tissues from the digestive system to the muscles of the animal, and there develops around its body a kind of bag or sack. In this state it represents the *cystic worm* of old writers; and occasionally it may prefer the liver, brain, or even the eye of its first host to the muscles in which it usually resides. Here, however, it can attain no further development. If the pig dies a natural death there can be no possibility of the tape-worm stage being evolved; but if, as is most likely, the pig suffers death at the butcher's hands, the little cystic worms may be bought by mankind at large along with

the pork in which they are contained. Such persons as partake of this comestible in an imperfectly cooked condition thereby qualify themselves for becoming the hosts of tape-worms, since, when a cystic worm from the muscle of the pig is introduced into the human stomach, the little bladder or sack which the worm possesses drops off, and the minute head of the worm becomes attached to the living membrane of the digestive system. Once fixed in this position, the circle of development may be said to be complete. A process of budding sets in, and joint after joint is produced, until the adult tape-worm, measuring, it may be, many feet in length, is developed, while each egg of this full-grown being, if surrounded with the requisite conditions, and if provided with a pig-host to begin with, will repeat the marvellous and complicated life-history of its parent." ("Humboldt Library," No. 29, p. 46.)

In the case of man, the variations are not near so great as in the cases just cited; yet in the earlier stages of his growth-development—in his embryonic condition—he presents successive forms in which an active imagination can discover some resemblance to the fish, the reptile, and the mammalian quadruped; and even after birth, when he first essays locomotion, it is usually after the manner of a quadruped.

It has sometimes been said that at the starting-point of their existence all plants and animals are alike. As a late writer puts it, "The apple which fell in Newton's garden, Newton's dog Diamond, and Newton himself began life at the same point." This is true in a very limited sense only. The bodies of the apple, the dog, and the man are all cellular structures; and in every aggregation of cellules there must be a first cellule around which the aggregation takes place; and it may be, and,

in fact, is true, that with our best microscopes we have not yet been able to discover any structural difference in these first cellules of the apple, the dog, and the man. But the fact that the apple-cellule always develops into an apple, the dog-cellule into a dog, and the man-cellule into a man, furnishes irrefragable proof that there is a radical difference in these cellules, either in structure or in the nature of the vitality with which they are endowed, though our microscopes may not be able to discover it.

This whole class of changes takes place under the law of variation of growth-development. Co-ordinate with this law, we find another law limiting the range of these variations.

In the case of the acorn, under the law of variation, it develops into the mature oak, and then the operation of the law, as a law of life, ceases. The oak dies, and by chemical agencies is resolved into its original elements. Its material falls back from its condition of organic matter to that of inorganic matter again. But before its death the mature oak had produced its acorns, and from these acorns other oaks grow just as the first oak did; and so this whole series of changes is repeated time after time. The life-story of the silk-worm, the frog, man, and even the parasitic tape-worm in this particular is the same with that of the oak.

The law of limitation in the case of growth-development may be thus stated: *Variation, extreme as it may be, never extends beyond the life of the individual plant or animal in which it occurs.* Growth-development runs a certain definite round, and then we are brought back to the same starting-point again. By growth-development an oak will never become anything but an oak, a silk-worm will never become anything but a silk-worm to the end of time.

I ask the reader to notice this conclusion at which we have arrived, as many writers, ignoring this law of limitation—a law as fixed and well determined as the law of variation is—appeal to these variations of growth-development in support of evolution, an hypothesis which postulates, as we shall see, the transformation of an oak, not immediately, but by successive variations, into a silk-worm, a silk-worm into a frog, and a frog into a man.*

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* In a brief review of this paper, as originally published, Dr. Woodrow writes: "We have recently often heard that evolution teaches that a cow is the descendant of the cabbage, and the oyster of the mucous okra, and the like; but we certainly did not expect such caricatures to be equalled and even surpassed by what an ex-professor of natural science designed to be an honest statement of the truth. No evolutionist believes anything at all like that which is here said to be evolution." (*Southern Presbyterian*, May 7th, 1885.)

"If the doctrine of evolution be true, it follows that, however diverse the different groups of animals and of plants may be, they must all, at one time or other, have been connected by gradational forms; so that from the highest animals, whatever they may be, down to the lowest speck of protoplasmic matter in which life can be manifested, a series of gradations, leading from one end of the series to the other, either exists or has existed. Undoubtedly that is *a necessary postulate* of the doctrine of evolution." (Huxley's "New York Lectures on Evolution," Lecture II.)

I would ask the reader also to notice Darwin's probable genealogy for man, as quoted in § 28. The frog may seem to Dr. Woodrow a very disreputable ancestor; but is it any more so than Darwin's sea-squirt? Evolutionists cling most persistently to a statement of their hypothesis in general terms—*e. g.*, "The transformation by successive differentiations of the homogeneous into the heterogeneous"—"descent with modifications." Charles Darwin is the only evolutionist, so far as I know, that has ventured to drop these generalities and state the hypothesis in terms which will make its meaning plain to the common reader. It may be true that in the actual process of evolution the cabbage may not have been in the particular line of ancestry of the cow. See the section on "Divergence in Character," in Chapter IV. of Darwin's "Origin of Species." It may have been the nettle, as that has sharp thorns—a sort of vegetable horns—or possibly

Growth-development moves in a circle, and has well been styled, as to its variations, a system of revolution, and not evolution.

§ 26. *Changes which Last beyond the Life of the Individual.*

There is a large class of variations in plants and animals which accompany changes of climate, domestication, and cultivation, which under the operation of "the law of heredity" are often perpetuated beyond the limits of a single life.

As an instance of variation through change of climate, take the case of our Indian corn, or maize. In Virginia it grows to the average height of ten feet, and requires five or six months to mature its grain. When acclimated in Vermont or Canada it grows to but half that height, and matures its grain in half the time required in Virginia. So the sweet potato (*Convolvulus batatus*), which in its native South blooms freely, producing regular seed, by which it can be propagated as well as by its tubers, has been acclimated as far north as New Jersey; but there it never blooms, and has to be propagated by its tubers alone.

Domestication and cultivation have wrought such great changes in many plants, that it is with difficulty we recognize the wild stock in the improved variety—*e.g.*, the crab apple in the Albemarle pippin, the dog rose in the cloth of gold. As the result of domestication and careful breeding, in the case of the horse we have the Flemish dray horse and the Shetland pony; and in the case of the dog, the Saint Bernard and the Skye terrier.

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the mullein, which has woolly leaves; but there must have been some plant which had reached the same stage of differentiation with the cabbage that did occupy a place in the ancestry of the cow.

Variations of this kind, as they appear in our "highly improved varieties," have usually been effected little by little. A slight improvement is wrought in one generation and perpetuated by the law of heredity; it serves as the starting-point for further improvement in the succeeding generation, and so the highly improved variety secured by continual cultivation or breeding will present an accumulation of many variations, each inconsiderable in itself, but in the aggregate constituting a great change.

The capacity for variation in this way, while very great in some species of plants and animals, notably in those which man has usually carried with him in his migrations, in others seems to be almost entirely wanting. The Kentucky blue-grass has been carefully cultivated for many years with no appreciable change. The elephant has been domesticated in the East for many centuries, and yet naturalists tell us that no improved variety of the elephant has been secured.

Such is the law of variation governing this class of changes—changes which by the operation of heredity are perpetuated beyond the limits of a single life, and which on this account would seem fitted for the purposes of evolution. Are there any laws of limitation here, as in the case of variations of growth-development? I answer, Yes.

1. *Co-ordinate with the law of heredity tending to the perpetuation of varieties once secured is the law of degeneration through neglect—the law of reversion to type, as it is more frequently called.* All skilful stock-raisers know that any highly improved variety can be maintained only by the greatest care and the most particular attention to certain rules of breeding which experience has taught them.

Professor Drummond writes: "If we neglect a garden plant, then a natural principle of deterioration comes in and changes it into a worse plant; or, if we neglect almost any of the domestic animals, they will rapidly revert to wild and worthless forms again. If a man neglects himself for a few years he will degenerate into a wild and bestial savage, like the dehumanized men who are discovered sometimes upon desert islands. The law of reversion to type runs through all creation." ("Natural Law in the Spiritual World," p. 99.)

2. *Co-ordinate with the law of variation we have been considering is a law of limitation, confining this variation within the boundary lines of species, "the law of the permanence of species," as it is called.* No two flowers have varied more under cultivation than the rose and the pelargonium; yet the rose has always continued a rose, and the pelargonium a pelargonium. No two domestic animals have undergone greater changes by careful breeding than the horse and the dog; yet the horse has always continued a horse, and the dog a dog.

The question respecting "the permanence of species" is not a new question in the scientific world. On the contrary, it is a question which has engaged the attention of naturalists from a very early date, and has been as carefully examined and as thoroughly discussed as any question in the whole range of natural science. Three times in the course of the present century has it been under discussion: in the early part of the century, in connection with the introduction of the natural system of classification in natural history; later on, in connection with the question of the unity of the human race, as that question was involved in the slavery controversy; and still more recently in connection with the subject we are now examining—evolution.

The most thorough examination of this question on purely scientific grounds that I know of is that of Dr. Bachman, Professor of Natural History in the College of Charleston, S. C. And it may be of interest to the reader to know that Dr. Bachman was engaged in making his examination at the same time Darwin was preparing his "Origin of Species." As exhibiting the thoroughness of his examination, Dr. Bachman tells us: "A visit to Europe afforded us an opportunity of carrying with us American specimens of plants, birds, and quadrupeds of all species, either identical with or closely allied to those of the Eastern Continent. The cabinets of individuals, the public museums, and the zoological collections of living animals were freely opened to us, and the best naturalists of Europe and the world united with us for many months in patient, minute, and varied examinations and comparisons. These were conducted in London, Edinburgh, Berlin, Dresden, and at the Association of European naturalists that met in Germany." ("Unity of the Human Race," p. 11.) The result of this protracted and careful study on the mind of Dr. Bachman was a firm conviction that all natural species of plants and animals are permanent; that, vary widely as plants and animals may, the variation never passes the boundary line of natural species.

I shall not attempt to give even a brief synopsis of this discussion here—time forbids; but instead thereof I will ask your attention to the recently expressed conclusions of several of the most eminent scientists of the day—men who are entitled, if any are, to express an opinion on the subject.

Professor Huxley writes: "After much consideration, and assuredly with no bias against Mr. Darwin's views, it is our clear conviction that, as the evidence now stands,

it is not absolutely proven that a group of animals having all the characters exhibited by species in nature has ever been originated by selection, whether artificial or natural." ("Lay Sermons," p. 295.)

Professor De Quatrefages writes: "I might here accumulate a mass of analogous facts and details, but over them all would appear a general fact including them, which is the expression of a law; and here is the fact. Notwithstanding observations reaching back for thousands of years, and made on hundreds of species, we do not yet know a single example of intermediate species obtained by the crossing of animals belonging to different species." ("Natural History of Man.")

Professor L. Agassiz writes: "Breeds (*i.e.*, varieties) among animals are the work of man; species were created by God." ("Methods of Study in Natural History," p. 147.)

The Duke of Argyll, in his "Primeval Man," recently republished in this country, writes: "Some varieties of form are effected in the case of a few animals by domestication and by constant care in the selection of peculiarities transmissible to the young; but these variations are all within certain limits; and wherever human care relaxes or is abandoned, the old forms return and the selected characters disappear. The founding of new forms by the union of different species, even when standing in close natural relation to each other, is absolutely forbidden by the sentence of sterility which Nature pronounces and enforces upon all hybrid offspring. And so it results that man has never seen the origin of any species. Creation by birth is the only kind of creation he has ever seen; and from this kind of creation he has never seen a new species come." ("Primeval Man," pp. 39, 40.)

Even Darwin virtually concedes the permanence of natural species when he writes: "I doubt whether any case of a perfectly fertile hybrid animal can be considered as thoroughly well authenticated." ("Origin of Species," p. 238.)

The difficulty of settling beyond all controversy the question under consideration arises mainly from two sources—viz.: (1) the confounding of artificial and natural species. The law concerns natural species alone. Artificial species, erected by naturalists for convenience of classification, are not always coterminous with natural species—*e.g.*, some naturalists make four artificial species of the one natural species of dog; and (2) the fact that the boundary line of many comparatively unknown natural species of plants and animals has been, as yet, but provisionally determined. But if the judgment in matters of fact of such men as Bachman, and Huxley, and De Quatrefages, and Agassiz, and the Duke of Argyll is to be trusted, and science is to embody facts and not fancies, I think it may be fairly claimed that, in the present state of our knowledge, we are bound to consider the law of the permanence of natural species as an established law, and in all our reasoning to treat it as such.

§ 27. *Evolution as held by Herbert Spencer.*

Evolution is defined by Herbert Spencer as "*the transformation of the homogeneous, through successive differentiations, into the heterogeneous.*" ("First Principles," p. 148.) In this, its widest range, evolution is held by a few only.

In the words of Principal Dawson, it is a hypothesis "which solves the question of human origin by assuming that human nature exists potentially in mere inorganic

matter, and that a chain of spontaneous derivation connects incandescent molecules or star dust with the world, and with man himself." ("The Earth and Man," p. 316.)

Of evolution in this form Professor Tyndall writes: "The question concerning the origin of life is, whether it is due to a certain fiat—'Let life be'—or to a process of evolution? Was it potentially in matter at the beginning, or was it inserted at a later period? However the conviction here or there may be influenced, the process must be slow which commends this hypothesis of natural evolution to the public mind. For what are the core and essence of this hypothesis? Strip it naked, and you stand face to face with the notion, that not alone the more ignoble forms of animalcular and animal life, not alone the nobler forms of horse and lion, not alone the wonderful and exquisite mechanism of the human body, but the human mind itself—emotion, intellect, will, and all their phenomena—were once latent in a fiery cloud. Surely, the mere statement of such a notion is more than a refutation. I do not think that any holder of this evolution hypothesis would say that I overstate it or overstrain it in any way. I merely strip it of all vagueness, and bring before you unclothed and unvarnished the notion by which it must stand or fall. Surely, these notions represent an absurdity too monstrous to be entertained by any sane mind." (London *Athenæum*, September 4th, 1870.)

Why is it that Professor Tyndall—and in this the great body of scientists agree with him—rejects evolution in this form so emphatically? I answer, because it is irreconcilable with one of the best-ascertained laws of biology, or the science of life.

For a long time two opposite theories respecting the

origin of life divided the scientific world : one, that matter can of itself generate life ; the other, that life can come only from pre-existing life. This subject, often discussed before, in the last few years has been carefully re-examined by some of our most eminent scientific experimenters in connection with the discussion of evolution, in part, but more especially in connection with the more practical question of the nature and propagation of certain diseases in plants and animals—*e.g.*, the diseases which, a few years ago, attacked the vine and the silkworm in France, and for a time threatened their destruction.

The result of this careful re-examination is stated by Professor Drummond in the words : "A decided and authoritative conclusion has now taken place in science. So far as science can settle anything, this question is settled. The attempt to get the living out of the dead has failed. Spontaneous generation has to be given up. And it is now recognized on every hand that life can come only from the touch of life." ("Natural Law in the Spiritual World," p. 63.) And in confirmation of this statement Drummond quotes :

Tyndall.—"I affirm that no shred of trustworthy experimental testimony exists to prove that life, in our day, has ever appeared independently of antecedent life."

Stirling.—"We are in the presence of the one incommunicable gulf—the gulf of all gulfs—the gulf which Mr. Huxley's protoplasm is as powerless to efface as any other material expedient that has ever been suggested since the eyes of men first looked into it—the mighty gulf between death and life."

Huxley.—"The present state of knowledge furnishes us with no link between the living and the non-living."

Virchow.—"Who ever recalls to mind the lamentable failure of all the attempts made very recently to discover a decided support for the *generatio æquivoca* in the lower forms of transition from the inorganic to the organic world, will feel it doubly serious to demand that this theory, so utterly discredited, should be in any way accepted as the basis of all our views of life."

"All really scientific experience tells us that life can be produced from a living antecedent only."

On such ground as this true science demands that if we adopt the hypothesis of evolution at all, its work must begin with the existence of life in the world—it can never bridge over the gulf which separates the living from the non-living.

§ 28. *Evolution as held by Charles Darwin.*

Darwin excludes the inorganic world from the range of the evolution which he contends for by the terms of his definition—viz.: "*descent with modifications.*" Descent in the sense in which he uses the word is "a proceeding from a progenitor, birth" (Webster), and so implies the previous existence of life. He doubtless believed all that geology teaches respecting the changes our earth has undergone in the past, but aware of the fact that an impassable gulf separated between the living and the non-living—impassable in so far as "natural selection," the immediate agent in evolution, according to his hypothesis, is concerned, he avoids all difficulties hence arising by starting with certain "primordial living beings," three or four at the most—possibly only one—whose origin he does not attempt to account for, and derives all other living beings, both plants and animals, therefrom by evolution.

His doctrine, stated in his own words, is: "Man is de-

scended from a hairy quadruped, furnished with a tail and pointed ears, probably arboreal in its habits, and an inhabitant of the Old World. This creature, if its whole structure had been examined by a naturalist, would have been classed among the quadrumana, as surely as would the common and more ancient of the New World monkeys. The quadrumana and all the higher mammals are probably derived from an ancient marsupial animal"—the marsupial most common in Virginia is the opossum—" and this through a long line of diversified forms, either from some reptile-like or some amphibian-like creature, and this again from some fish-like animal. In the dim obscurity of the past we can see that the progenitor of all the vertebrates must have been an aquatic animal, provided with branchia"—*i.e.*, gills—" with the two sexes united in the same individual, and with the most important organs of the body, such as the brain and heart, imperfectly developed. This animal seems to have been more like the larvæ of our existing ascidians"—sea-squirts, as they are commonly called—" than any other known form." (" Descent of Man," vol. 2, p. 372.)

As Darwin limits the range of evolution in one direction by excluding inorganic nature—all that preceded the existence of life in the world—so others, of eminent attainments in science, limit its range in the opposite direction, and exclude the origin of man from its phenomena.

If the conclusion reached in our examination of the question respecting primeval man be accepted—viz., " That man commenced his course as a civilized being, believing in the one only living and true God " (§ 23), it is conceded on all hands that he cannot be the product of evolution from a brute.

Professor De Quatrefages, at the close of a lengthened

discussion of the subject of man's origin, writes: "To sum up, the theory that man is descended from the monkey by means of successive modifications is a brilliant fancy which has no support in precise facts; in most cases it depends upon possibilities, and often upon possibilities in flagrant opposition to facts. In the name of scientific truth I affirm that we have had for ancestors neither gorilla nor ourang-outang nor chimpanzee." ("Natural History of Man," p. 86.)

Principal Dawson writes: "Evolution cheats us with the semblance of a man without the reality. Shave and paint your ape as you may, clothe him and set him upon his feet, still he fails greatly of 'the human form divine;' and so it is with him morally and spiritually as well. We have seen that he wants the instinct of immortality, the love of God, the mental and spiritual power of exercising dominion over the earth." ("The Earth and Man," p. 395.)

The possession of intellect and conscience; the capacity for distinguishing between truth and error, right and wrong; the ability to communicate thought by language, and to originate the fine arts—painting, sculpture, architecture—and to start and carry forward all that is embraced in our modern civilization, to say nothing of anatomical differences, make between the ape and man not as wide a gulf, it may be, as that which separates between the living and the non-living, but a gulf as utterly impassable.

§ 29. *Evolution in its Limited Range.*

In view of the facts stated in the last section, such naturalists as Virchow of Germany, Wallace of England, and Dana of our own country unite with De Quatre-

fages and Dawson in rejecting the hypothesis of evolution as applied to man.

Taking the hypothesis, now, in its limited range as beginning the series with Darwin's primordial living beings, and excluding the origin of man from its phenomena—and it is with these limitations it is generally held, where it is held at all—*may we accept it, on scientific grounds, as probably true?*

I put the question in this form, because evolution is, to use the words of Professor Huxley, "as yet a hypothesis, and not the theory of species." ("Lay Sermons," p. 295.)* And a hypothesis is merely "a provisional explanation of phenomena," and therefore to be held ready to be given up whenever a more satisfactory explanation is offered, and should never be accounted as

* Evolutionists differ, not only in the range which they assign to its operation, but also as to the means by which this evolution is effected. The following "conspectus" of the several theories is from Professor Winchell's "Doctrine of Evolution," pp. 44, 45.

"Through a force which is a mode of the unknowable."—*Spencer.*

Through external forces.

"Physical surroundings (*Transmutation*)."—*De Maillet.*

Conflicts of individuals, or "natural selection."

Embracing mental and moral nature.

"By insensible gradations (*Variative*)."—*Darwin, Haeckel, Chapman, etc.*

"With occasional leaps (*Saltative*)."—*Huxley.*

"Excluding the mind and body of man."—*Wallace.*

Through an internal force, influenced by external conditions.

"Perpetual effort to improve (*Conative-variative*)."—*Lamarck, St. Hilaire.*

Genetic process exclusively (*Filiative*).

"Prolonged development of embryo (*Variative-filiative*)."

—"*Vestiges.*"

"Accelerated development (*Variative-filiative*)."—*Hyatt and Cope.*

"Extraordinary births (*Saltative-thamogene*)." — *Parsons, Owen, Mivart.*

"Partheno-Genesis (*Saltative-filiative*)."—*Ferris, Kolliker.*

an integral part of science itself. True science is made up of a statement of facts and of conclusions reached by reasoning upon these facts; and hence, in the history of science, while hypotheses innumerable have arisen, been popular for a season, and then passed away and been forgotten, true science has remained unchanged. Huxley rests the claim of evolution to acceptance mainly upon the gradual advance in the type of living beings, as we learn the history of organic nature from a study of the fossiliferous rock strata of the earth, and the satisfactory explanation which it gives of the natural grouping of plants and animals, as set forth in the natural system of classification, now universally adopted by botanists and zoologists.

Darwin, in addition to this, urges certain facts respecting the geographical distribution of plants and animals —the variation which animals undergo in the earlier stages of their existence, as they present themselves in our study of embryology, and the existence of rudimentary organs in certain animals—all which he contends are better and more fully explained by the hypothesis of evolution than in any other way.

Before entering upon a particular examination of these several points, I would remind the reader that there is another hypothesis—we will call it a hypothesis for the present—covering the same ground that evolution does, which was at one time universally adopted, and even now is held by men of no mean attainments in science—*e.g.*, Louis Agassiz and Principal Dawson—viz.: the hypothesis of creation—creation by an almighty, intelligent being, working according to a plan, and with a definite end in view. And I will ask him especially to notice two particulars in this hypothesis, as it is set forth in the oldest cosmogony extant—a cosmogony which

has moulded the thoughts on this subject of many generations.

(1) Creation is not a single act of the Almighty, by which our world, embracing organic as well as inorganic nature, was brought into being, but a continuous work, or succession of acts, extending over a long period, but terminating with the creation of man ; and (2) in the creation of plants and animals they were not brought into being as single individuals, or pairs at the most, as evolution demands ; but when the Creator spake He said : "Let the waters bring forth abundantly (literally *swarm forth*) the moving creature that hath life, and fowls that they may fly above the earth, in the open firmament of heaven." (Gen. 1 : 20.) The result of such a work of creation was at once to people the air, the earth, and the sea with many individuals or pairs of every species intended to inhabit them — man, the species homo, being the only exception to this general rule.

§ 30. *Arguments for Evolution.*

Turning now to an examination of the several arguments by which evolution is urged upon our acceptance by its advocates, we will consider them in order, beginning with the least important.

1. *The existence of rudimentary organs in certain plants and animals.* Giving instances of rudimentary organs, Darwin writes : "In the mammalia the males possess rudimentary mammæ ; in snakes one lobe of the lungs is rudimentary ; in birds the *bastard-wing* may safely be considered a rudimentary digit, and in some species is so far rudimentary that it cannot be used for flight. What can be more curious than the presence of teeth in fœtal whales, which when grown up have not a tooth in their heads, or the teeth which never cut through the

gums in the upper jaws of unborn calves!" And subsequently he adds: "It appears probable that disuse has been the main agent in rendering organs rudimentary. It would at first lead by slow steps to the more and more complete reduction of a part, until at last it became rudimentary, as in the case of the eyes of the animals inhabiting dark caverns, and of the wings of birds inhabiting oceanic islands, which have seldom been forced by beasts of prey to take flight, and have ultimately lost the power of flying." ("Origin of Species," pp. 406, 408.)

In reply I would say, Darwin's explanation of the origin of rudimentary organs may be the true one—in some cases it doubtless is; but (1) I do not see how, when thus explained, they furnish any support to the hypothesis of evolution; the cases as he states them are cases of degeneration, and not of evolution; and (2) the variations here cited are not variations originating new species, but simply new varieties of an old species. Respecting one of the blind animals inhabiting the Mammoth Cave in Kentucky—the cave rat—Darwin tells us "two of them were captured by Professor Silliman at about half a mile distance from the mouth of the cave, and therefore not in the profoundest depths. Their eyes were lustrous and of large size; and these animals, as I am informed by Professor Silliman, after having been exposed for about a month to a graduated light, acquired a dim perception of objects." ("Origin of Species," ch. 5.) The blindness of this cave rat no more entitled it to be considered a species different from that inhabiting the country adjacent to the cave than the blindness of the blind man entitles him to be considered a species of man different from the men around him whose eyes yet serve the purposes of sight. No naturalist, in so far as I know.

has ever proposed to classify blind men even as a variety of the species homo ; and certainly not as a new species.

2. *The facts of embryology are cited in support of the hypothesis of evolution.* On this subject Spencer writes : "That the uneducated and the ill-educated should think that the hypothesis that all races of beings, man inclusive, may in process of time have been evolved from the simplest monad, a ludicrous one, is not to be wondered at. But for the physiologist, who knows that every individual being is so evolved, who knows, further, that in their earliest condition the germs of all plants and animals whatever are so similar, that there is no appreciable distinction among them which would enable us to determine whether a particular molecule is the germ of a conferva or of an oak, of a zoophyte or of a man ; for him to make a difficulty of the matter is inexcusable. Surely, if a single cell may, when subjected to certain influences, become a man in the space of twenty years, there is nothing absurd in the hypothesis that under certain other influences a cell may in the course of millions of years give origin to the human race. The two processes are generically the same, and differ only in length and complexity." ("Progress," Humboldt Library, No. 17, p. 268.)

To this I reply : (1) All the variations with which the study of embryology has made us acquainted, and to which Spencer refers in the above-quoted paragraph, are variations of growth-development, and, as we have already seen (§ 25), belong to a system of revolution, and not evolution ; they are parts of a series which runs a certain round, returning ever to the same starting-point again ; they belong to the history of an individual life, and are repeated only as that life is repeated. In the case of the silk-worm moth, it is first an egg, then a

caterpillar, then a chrysalis, and lastly a winged insect; and just such as it is to-day it was six thousand years ago, in the garden of Eden; and although it has passed through this whole series of changes six thousand times, it has made no upward progress in its form and structure; there has been through its growth-variations no evolution into a creature of a higher order; (2) these variations of growth-development exhibit, it is true, possibilities of change in animal structure, and that is all that can be claimed for them. De Quatrefages well says: "When we get upon the ground of possibility, I know not where we shall stop. Everything is possible except that which implies contradiction. Consequently, we are no longer on the ground of science, which demands positive, precise facts. We are living in the land of romance." ("Natural History of Man," p. 82.)

3. *The geographical distribution of plants and animals* is appealed to by evolutionists; especially the fact that certain species are to be found in certain countries only —*e.g.*, the kangaroo in Australia and the sloth in South America; and it is said, if we suppose them to be the product of evolution, we can readily understand how, having been evolved in the countries in which they are found, they have not yet spread to other parts of the earth.

To this I reply, True; but on the hypothesis of creation, we may suppose, either that they were never created in the countries in which they are wanting, as a wise Creator would never have created tropical animals in the Arctic regions, or that, having once existed widely diffused, they have died out in all except the lands in which they are now found. The disappearance by death of species of plants and animals from a country is an event of frequent occurrence in the history of our world.

The dodo, an immense bird, once inhabiting the islands of Bourbon and Mauritius, has become extinct since the discovery of those islands by Europeans, in the course of the last hundred and fifty years. "Pictet catalogues ninety-eight species of mammals which have inhabited Europe in the post-glacial period. Of these, fifty-seven still exist unchanged, and the remaining forty-one have disappeared." ("The Earth and Man," p. 357.)

The wide distribution of certain species of animals—*e.g.*, the oyster—and the oyster, in some of its varieties, is to be found on the coast of almost every country within the torrid and temperate zones—is very difficult to account for on the hypothesis of evolution, which traces all the oysters in the world back to an original oyster, evolved from some lower mollusk, at some one point from which they must all have distributed themselves. On this point Darwin writes: "Turning to geographical distribution, the difficulties encountered on the theory of '*descent with modification*' are serious enough. All the individuals of the same species, and all the species of the same genus, or even higher group, must have descended from common parents; and therefore, in however distant and isolated parts of the world they may now be found, they must in the course of successive generations have travelled from some one point to all others. We are often wholly unable to conjecture how this could have been effected." ("Origin of Species," p. 414.) If the hypothesis of evolution seems to possess some little advantage over that of creation in our study of the kangaroo, "the tables are turned" completely when we come to the study of the oyster.

4. A fourth argument in support of evolution is founded upon *the gradual advance in type of living creatures*, as we learn the history of organic nature from

an examination of the fossiliferous rock strata of the earth; and *the satisfactory explanation which it furnishes of the natural groupings of plants and animals*, as set forth in the natural system of classification now universally adopted by botanists and zoologists. On this ground, mainly, Professor Huxley advocates the hypothesis; and, in my judgment, it furnishes the strongest argument which has yet been brought forward in its favor.

Evolution does afford a very simple and a very beautiful explanation of both the gradual advance in type of living creatures and the natural groupings of plants and animals. But the theory of creation by an almighty and intelligent creator, working with a plan determined on at the beginning, affords, I think, an explanation equally simple and equally beautiful. Of our system of natural classification Louis Agassiz writes: "Are our systems the inventions of naturalists, or only their readings of the Book of Nature? . . . If these classifications are not mere inventions, if they are not an attempt to classify for our own convenience the objects we study, then they are the thoughts which, whether we detect them or not, are expressed in nature; then nature is the work of thought, the product of intelligence, carried out according to plan, therefore premeditated; and in our study of natural objects we are approaching the thoughts of the Creator, reading His conceptions, interpreting a system that is His, and not ours." ("Methods of Study in Natural History," pp. 13, 14.)

I have now given the reader a brief but, I think, a fair statement of the arguments by which Darwin and other evolutionists support their hypotheses, with my answers thereto. These arguments may be found stated at large in "The Origin of Species," first published in 1859. In the *Southern Presbyterian Review* for July,

1884, Dr. Woodrow published his article on evolution, and in this he advances the same four arguments in support of it by which Darwin advocated it, and which are briefly stated above. His is the latest statement of the argument for evolution, by one fully competent to make a fair statement, that I have seen. And I call the reader's attention to it now, that he may note the fact that twenty-five years of earnest study and voluminous writing on the part of such men as Spencer and Huxley and Mivart has added nothing really new to the argument originally advanced by Darwin.

§ 31. *Some Objections to Evolution.*

The hypothesis of evolution has been objected to on several grounds. Among the most important of these are the following—viz.:

1. In the case of certain natural groups—*e.g.*, the group of mollusks inhabiting chambered shells, such as the nautilus pompilius of our day—and this group stands at the head of the class of mollusks—*the higher species appear first and not the lowest, as evolution would require.* Their history, if they be the product of evolution, is one of degradation and not advance in the scale of being. This truth, which has been recognized from the first, has become more and more evident as the discussion has proceeded.

Grant Allen is the only naturalist, in so far as I know, who has taken the hypothesis of evolution with him out into the field, and attempted to apply it in detail to plants and animals. This he has done in a very interesting series of papers, embraced in his "Evolutionist at Large" and "Vignettes from Nature." The conclusion to which he comes on this point he gives us in these words: "The real fact is, that by far the greatest number of

plants and animals are degraded types—products of retrogression rather than of upward development. Take it on the whole, evolution is always producing higher and still higher forms of life ; but at the same time stragglers are always falling into the rear, as the world marches onward, and learning how to get their livelihood in some new and disreputable manner, rendered possible by nature's latest achievements. The degraded types live lower lives, often at the expense of the higher, but they live on somehow, just as the evolution of man was followed by the evolution of some fifty new parasites, on purpose to feed upon him." (Humboldt Library, No. 33, p. 5.) That "the evolution of man was followed by the evolution of some fifty new parasites on purpose to feed upon him," if it means anything, must mean that at the same time that man was developed from the highest of brutes, by an evolution upward, some fifty parasites were developed from the lower orders of the animal kingdom, by an evolution downward—an evolution of degradation. If this be a correct representation of the facts in the case—if plants and animals are as often "the products of retrogression as of upward development," then it follows, as a necessary consequence, that the true starting-point of the animal kingdom was not with the lowest and simplest in structure—*e.g.*, the eozoon—but somewhere about the middle of the line, as from this point only could evolution have proceeded in both directions. This conclusion is utterly irreconcilable with "the record of the rocks."

2. *The great number of transition forms required to connect species with species, according to the evolution hypothesis, cannot be found.* Darwin accounts for their absence from the kingdom of living organic nature as it surrounds us to-day by supposing that there is now, and

has been all along, "a struggle for existence, with a survival of the fittest," and that in this struggle these transition forms have disappeared. If we admit this explanation as to the present, it does not touch the case of the past. If in the struggle for existence innumerable species have perished all along the line from the beginning—and Darwin expressly admits that this must have been true—how comes it that in the fossiliferous rocks, that vast burying-ground of the ages, none of their graves are to be found? Evolution demands a continuous chain, connecting the latest with the earliest forms; while the fossiliferous rocks disclose only detached portions of a chain, with innumerable missing links.

On this point Darwin writes: "Why, then, is not every geological formation and every stratum full of such intermediate links? Geology assuredly does not reveal any such finely graduated organic chain; and this, perhaps, is the most obvious and serious objection which can be urged against the theory. The explanation lies, as I believe, in the extreme imperfection of the geological record." And he subsequently adds: "The noble science of geology loses glory from the extreme imperfection of the record. The crust of the earth, with its embedded remains, must not be looked at as a well-filled museum, but as a poor collection made at hazard, and at rare intervals." ("Origin of Species," ch. 15.) And Huxley writes: "It is only about the ten-thousandth part of the accessible parts of the earth that has been examined carefully. Therefore, it is with justice that the most thoughtful of those who are concerned in these inquiries insist continually upon the imperfection of the geological record; for, I repeat, it is absolutely necessary, from the nature of things, that that record should be of the most fragmentary and imperfect character." (Humboldt

Library, No. 16, p. 192.) And yet, on the authority of this "most fragmentary and imperfect record," covering "only about the ten-thousandth part of the accessible parts of the earth," Huxley does not hesitate to set aside the Mosaic cosmogony as irreconcilable with the plain teachings of geology.

But is this record so exceedingly imperfect? In his "Primeval Man" the Duke of Argyll writes: "It is true that this record—the geological record—is imperfect. But, as Sir Roderick Murchison has long ago proved, there are parts of that record which are singularly complete, and in those parts we have the proofs of creation, without any indication of development. The Silurian rocks, as regards oceanic life, are perfect and abundant in the forms they have preserved, yet there are no fish. The Devonian Age followed tranquilly and without a break; and in the Devonian sea suddenly fish appear—appear in shoals and in forms of the highest and most perfect type. There is no trace of links or transitional forms between the great class of mollusks and the great class of fishes. There is no reason whatever to suppose that such forms, if they had existed, can have been destroyed in deposits which have preserved in wonderful perfection the minutest organisms." ("Primeval Man," pp. 45, 46.)

§ 32. *Two Fatal Objections to Evolution.*

Besides the objections stated above, there are two fatal objections to the evolution hypothesis, not only in the form in which Darwin states it, but in any and all its forms, either of which should, I think, settle the question as a question between it and the theory of creation.

I. *In nature—outside the disturbing agency of intelligent man—there is no tendency to permanent change*

manifested by plants and animals—no tendency to advance in structure ; but, on the contrary, a manifest tendency to preserve the *status quo* of their beginning. Variations, undoubtedly, do sometimes occur in plants and animals in a wild state, or state of nature ; but when they do occur, the law of "reversion to type" (§ 26) comes in, and soon wipes them out again. The variety of grape known as the scuppernong, a favorite variety throughout the South, I have reason to believe is a variety produced "in a wild state ;" and it can be propagated by layering or dividing the roots only. Whenever the attempt has been made to go back to the seed, the result has been a vine bearing not the yellowish-green scuppernong, with its delicious flavor, but the well-known black muscadine.

The highly improved varieties of animals—and the same is true of plants—can be maintained only by the greatest care on the part of the stock-breeder. Let him turn out the finest Jersey cow in all his herd to run wild on the prairies and mingle with the wild stock there, and she will either die without issue, or her descendants will degenerate from generation to generation, until they become undistinguishable from the wild stock around them.

In the ancient painting and sculptures of Egypt and Africa we have depicted many plants and animals as they existed three or four thousand years ago ; and by comparing these representations with the same plants and animals as they exist to-day, we learn that there has been no change in all this time. This Darwin himself admits. (See "Origin of Species," p. 152.) Louis Agassiz, a few years ago, made an examination of the Florida reefs. After carefully comparing the form and structure of the coral polyps at work there to-day with those that

must have built the oldest reefs, he writes: "In these seventy thousand years has there been any change in the corals living in the Gulf of Mexico? I answer most emphatically, *No.* Astreans, porites, meandrinas, and madrepores were represented by exactly the same species seventy thousand years ago as they are now." ("Methods of Study in Natural History," p. 190.) Principal Dawson gives us the results of his observations on this point, in the case of certain mollusks, in these words: "I have for many years occupied a little of my leisure in collecting the numerous species of mollusks and other marine animals existing in a sub-fossil state in the post-pliocene clays of Canada, and comparing them with their modern successors. I do not know how long these animals have lived. Some of them, certainly, go back into the tertiary, and recent computation would place even the Glacial Age at a distance from us of more than a thousand centuries. Yet after carefully studying about two hundred species, and of some of them many hundred of specimens, I have arrived at the conclusion that they are absolutely unchanged." ("The Earth and Man," pp. 358, 359.)

"Artificial" and "natural" selection are used by Darwin and Huxley as correlative terms. Thus, Darwin writes: "Can the principle of selection, which we have seen is so potent in the hands of man, apply under nature? I think we shall see that it can act most efficiently." "As man can produce, and certainly has produced, a great result by his methodical and unconscious means of selection, what may not natural selection effect?" "As man can produce a great result with domestic animals and plants by adding up in any given direction individual differences, so could natural selection—but far more easily—from having incomparably longer time for

action." ("Origin of Species," ch. 4.) Under the term "artificial selection" they include all the agencies, whatever may be their nature, through which intelligent man has secured our improved varieties of plants and animals. By "natural selection," then, they must mean a natural agency, which, in the wild condition of plants and animals, and without any guidance of intelligence, shall accomplish the same, and even far greater results. Now, in view of the facts stated above, I say natural selection has no existence; it is a creature of Darwin's imagination. The manifest tendency in nature is to preserve the *status quo* of its beginning.

Professor Huxley virtually admits this. "There is no fault," writes he, "to be found with Mr. Darwin's method, then; but it is another question whether he has fulfilled all the conditions imposed by that method. Is it satisfactorily proved, in fact, that species may be originated by selection? *that there is such a thing as natural selection?** that none of the phenomena

* Dr. Woodrow charges me with perverting this declaration of Professor Huxley. In the *Southern Presbyterian* of May 7th, 1885, he writes: "Any one can see that the question Professor Huxley is here discussing is not evolution, but whether natural selection is the process by which evolution is effected. . . . The reason why we have taken time to make this point perfectly clear is that Dr. Armstrong quotes (as many others have done during this discussion) some of the expressions above given as if they were applied by Professor Huxley to evolution, thus wholly misunderstanding and therefore perverting what he has said." To this I reply:

1. If Dr. Woodrow will read carefully what I have written, he will see that my quotation is a perfectly fair one—a quotation of Professor Huxley's virtual admission that there is no such thing as natural selection, in support of my position that natural selection has no existence.

2. Professor Huxley, as we all know, is a pronounced evolutionist; and Professor Winchell correctly represents him as teaching that evolution is effected by natural selection, the only difference between

are inconsistent with the origin of species in this way? If these questions can be answered in the affirmative, Mr. Darwin's views step out of the rank of hypotheses into that of proved theories; but so long as the evidence at present adduced falls short of enforcing that affirmation, so long to our minds must the new doctrine be content to remain among the former—an extremely valuable and in the highest degree probable doctrine—indeed, the only extant hypothesis which is worth anything in a scientific point of view, but still a hypothesis, and not yet the theory of species." ("Lay Sermons," pp. 294, 295.)

In explanation of Professor Huxley's remark, quoted above, that evolution is "the only extant hypothesis which is worth anything in a scientific point of view," I must tell the reader that he rejects the theory of creation as unscientific, because incapable of verification by direct observation in our day—a position involving a very false view of the nature of science, as I think, and certainly untenable by one who confesses himself compelled to admit of creation, or something equivalent thereto, at two points in the history of our world—viz.: the origin of matter and the origin of life.

II. *The law of the permanance of species*—that, however great the variation wrought, under the operation of natural or artificial agencies, may be, it never passes the boundary line of species, is irreconcilable with the hypothesis of evolution. That hypothesis is, that each higher type of plant and animal has been evolved from

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him and Darwin being that while Darwin holds that natural selection always proceeds by "insensible gradations," Professor Huxley holds that there are "occasional leaps" (§ 29, note). The reconciliation of this belief with the implied admission, quoted above, is his work, not mine.

the next below it, and so demands the passage of the boundary lines, not of one species only, but of all ; and so the boundary lines of genera, orders, and classes as well—all that intervenes between primordial living beings and man.

The proof of the permanence of species I have already given you (§ 26) ; and if we are to proceed upon principles of true science, we must consider that question settled, at least for the present, and treat it as a settled question ; and so doing, we cannot accept the hypothesis of evolution.

You will naturally ask me, How do evolutionists reconcile that hypothesis with this law ? Herbert Spencer slurs over the difficulty in this style : "We find scattered over the globe vegetable and animal organisms numbering, of the one kind (according to Humboldt), some three hundred and twenty thousand *species*, and of the other, some two million *species* (see Carpenter) ; and if to these we add the numbers of animal and vegetable *species* that have become extinct, we may safely estimate the number of *species* that exist and have existed on the earth at not less than *ten millions*. Well, which is the most rational theory about these ten millions of *species* ? Is it most likely that there have been ten millions of special creations ? or is it most likely that by continual modifications, due to change of circumstances, ten millions of *varieties* have been produced, as *varieties* are being produced still ?" ("Progress : its Law and Cause.") The ten million are species when it suits Spencer's purpose, and, presto, the same ten million are but varieties when that suits his purpose best. Such juggling with terms is unworthy an honest scientist. Others have attempted a reconciliation by supposing that this law has not always existed ; that far back in

ages past it is possible that a different order of things may have prevailed. On this point listen to De Quatrefages: "In many cases these possibilities are opposed to the facts that transpire in our day, so that the reasoning comes to this; but is it not possible that events took place in former times differently from those which happen to day? Serious science, gentlemen, cannot accept this mode of reasoning. It does not admit changes in the laws which rule this world, in those which concern organic beings any more than in those which concern inorganic bodies." ("Natural History of Man," p. 82.)

§ 33. *Conclusions.*

The reader has now the whole case before him; the arguments for and against the hypothesis of evolution briefly, but I think fairly, stated.* The justice of the following remarks of the Duke of Argyll no thoughtful scientist can question—viz.: "If the theory of development can be shown to involve difficulties of conception which are quite as great as those which it professes to remove, then it ceases to have any standing ground at all. An hypothesis which escapes from particular difficulties by encountering others which are smaller may be tolerated, at least provisionally. But an hypothesis which, to avoid an alternative supposed to be inconceivable, adopts another alternative encompassed by many difficulties quite as great, is not entitled even to provisional acceptance." ("Primeval Man," p. 48.) For this reason, and on grounds purely scientific, we reject the hypothesis of evolution in all its forms. When Virchow, "at the late tercentenary of the University of Edinburgh, in the presence of the assembled magnates of

* For a further discussion of the theory of creation, see §§ 51–54.

Europe, . . . declared with great emphasis that 'evolution has no scientific basis' " (*Christian Thought* for July, 1884), he expressed just the conclusion to which, in view of all the facts of the case, we feel constrained to come. The same judgment had been previously expressed by the Duke of Argyll in the same words: "The various hypotheses of development," writes he, "of which Mr. Darwin's theory is only a new and special version, . . . are destitute of proof; and in the form which they have yet assumed, it may justly be said that they involve such violations of or departures from all that we know of the existing order of things as to deprive them of all scientific basis." ("Reign of Law," 5th ed., p. 28.)

But a few weeks ago it was stated in the public prints that the school authorities in Prussia had prohibited the teaching of evolution in their public schools. Its popularity, great for a season, is, if I mistake not, on the wane. The earlier chapters of its history in our day were bright, but bright with a delusive promise. And I will venture the prediction that its last chapter—and those now living will have the opportunity of reading that chapter—will be but a record of what Huxley calls the oft-repeated tragedy of science—the slaughter of a beautiful theory by ugly facts.*

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* The most recent expressions of opinion on this subject which I have seen, both of them from men of deservedly high standing in the scientific world, are as follows—viz.:

Principal Dawson, of Canada, writes: "The doctrine of evolution, as held by a prominent school of German and English biologists, I regard as equally at variance with science, revelation, and common-sense, and destitute of any foundation in fact. It belongs, in truth, to the region of those illogical paradoxes and loose speculations which have ever haunted the progress of knowledge, and have been dispelled only by increasing light. For this reason I have always refused to recognize the dreams of materialistic evolution as of any

§ 34. *Relation of Revelation to Evolution as Taught by Huxley.*

The evolution hypothesis, when taken in its widest range, "which solves the question of human origin by assuming that human nature exists potentially in mere organic matter, and that a chain of spontaneous derivation connects incandescent molecules or star-dust with the world and with man himself," is, beyond all question, atheistic; and it is adopted and defended by its advocates as an atheistic hypothesis. In this form it is confessedly irreconcilable with revelation and the Christian faith.

Just how far Professor Huxley adopts the evolution

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scientific significance, or, indeed, as belonging to science at all." (*Philadelphia Presbyterian,* July 11th, 1885.)

Under date of August 2d, 1885, Professor George E. Post writes: "Yesterday I was in the Natural History department of the British Museum. I had business touching some fossils which I found in the Lattakia miocene and pliocene clay beds, and about which I wrote an article which appeared in *Nature* last year. Mr. Etheridge, F.R.S., kindly examined and named them for me. I was anxious to hear what a first-rate working scientist, with perhaps the largest opportunity for induction in the world, would say on Darwinian evolution. So, after he had shown me all the wonders of the establishment, I asked him whether, after all, this was not the working out of mind and providence. He turned to me with a clear, honest look into my eyes, and replied: 'In all this great museum there is not a particle of evidence of transmutation of species. Nine tenths of the talk of evolutionists is sheer nonsense, not founded on observation, and wholly unsupported by fact. Men adopt a theory, and then strain their facts to support it. I read all their books, but they make no impression on my belief in the stability of species. Moreover, the talk of the great antiquity of man is of the same value. There is no such thing as a fossil man. Men are ready to regard you as a fool if you do not go with them in all their vagaries; but this museum is full of proofs of the utter falsity of their views.'" (*Central Presbyterian,* September 16th, 1885.)

hypothesis in this form I will not undertake to say, but will give the reader his statement of his belief in his own words. In his New York Lectures he writes: "The hypothesis of evolution supposes that, at any comparatively late period of past time, our imaginary spectator" (he had previously written, "I will ask you to imagine what would have been visible to a spectator of the events which constitute the history of the earth") "would meet with a state of things very similar to that which now obtains; but that the likeness of the past to the present would gradually become less and less in proportion to the remoteness of his period of observation from the present day; that the existing distribution of mountains and plains, of rivers and seas, would show itself to be the product of a slow process of natural change, operating upon more and more widely different antecedent conditions of the mineral framework of the earth, until, at length, in place of that framework, he would behold only a vast nebulous mass, representing the constituents of the sun and of the planetary bodies. Preceding the forms of life which now exist, our observer would see animals and plants not identical with them, but like them, becoming simpler and simpler, until finally the world of life would present nothing but that undifferentiated protoplasmic matter which, so far as our present knowledge goes, is the common foundation of all vital activity."

"The hypothesis of evolution supposes that in all this vast progression there would be no breach of continuity, no point at which we could say, 'This is a natural process,' and, 'This is not a natural process,' but that the whole might be compared to that wonderful process of development which may be seen going on every day under our eyes, in virtue of which there arises, out of

the semifluid, comparatively homogeneous substance which we call an egg, the complicated organization of one of the higher animals. This, in a few words, is what is meant by the hypothesis of evolution ;" and in the same lecture he writes : " We have come to look upon the present as the child of the past and as the parent of the future ; and as we have excluded chance from a place in the universe, so we ignore, even as a possibility, the notion of any interference with the order of nature." (" New York Lectures on Evolution," Lecture I.)

This, if it be not formal atheism, is virtual atheism ; and such Professor Clifford, of England, who had adopted evolution in this form, found it ; and on his dying-bed gave utterance to " the inexpressibly mournful thoughts —" It cannot be doubted that the theistic idea is a comfort and a solace to those who hold it, and that the loss of it is a very painful loss. It cannot be doubted, at least by many of us in this generation, who have received it in our childhood, and have parted from it since with such searching trouble as only cradle-faiths can cause. We have seen the spring sun shine out of an empty heaven to light up a soulless earth ; we have felt with utter loneliness that the Great Companion is dead." (*Christian Thought*, vol. 1, p. 86.)

§ 35. *Relation of Revelation to Evolution as taught by Charles Darwin.*

Respecting the hypothesis of evolution as taught by Charles Darwin, beginning with certain primordial living forms, and including man in its range, I remark :

1. It is plainly irreconcilable with the Bible account of the origin of man—" And God said, Let us make man in our own image, after our likeness ; and let them

have dominion over the fish of the sea, and over the fowl of the air, and over the cattle, and over all the earth, and over every creeping thing that creepeth upon the earth. So God created man in His own image, in the image of God created He him ; male and female created He them." (Gen. 1 : 26, 27.) " And the Lord God formed man of the dust of the ground, and breathed into his nostrils the breath of life, and man became a living soul. . . . And the Lord God caused a deep sleep to fall upon Adam, and he slept ; and He took one of his ribs, and closed up the flesh instead thereof. And the rib, which the Lord God had taken from man, made He a woman, and brought her unto the man." (Gen. 2 : 7, 21, 22.) Compare this with the account of the origin of man given by Darwin (quoted in § 28), and I think the reader will admit that by no fair interpretation can these two accounts be made to harmonize one with the other.

2. And Darwin does not help the case when he writes : " When I view all beings not as special creations, but as the lineal descendants of some few beings who lived long before the first bed of the Silurian system was deposited, they seem to me to become ennobled." (" Origin of Species," p. 436.) It is not length of ancestry alone which ennobles, but character as well. And of such a genealogy as that which Darwin claims for himself—a genealogy which reads : man which was the son of a long-tailed, sharp-eared monkey, which was the son of an opossum, which was the son of a lizard, which was the son of a fish, which was the son of a sea-quirt—I cannot but think the more a man has of it, the worse off will he be.

3. Darwin speaks of evolution as simply " *a mode of creation*," and so cannot be charged with formal atheism. And yet he teaches that evolution is effected

through "natural selection;" and in explaining this phrase, he writes: "It is difficult to avoid personifying nature; but I mean by nature only the aggregate action and product of many natural laws; and by laws, the sequence of events as ascertained by us." ("Origin of Species," ch. 4.) After reading this, one will not be surprised at the statement made recently by the Duke of Argyll, in a public lecture in Glasgow: "In the last year of his life Mr. Darwin did me the honor of calling upon me in London, and I had a long and interesting conversation with that distinguished observer of nature. In the course of conversation I said it was impossible to look at the wonderful processes of nature which he had observed without seeing that they were the effect and expression of mind. I shall never forget Mr. Darwin's answer. He looked at me hard and said: 'Well, it often comes over me with overpowering force, but at other times (and he shook his head) it seems to go away.'" (*Philadelphia Presbyterian*, May 16th, 1885.)*

"The faith expressed by these chief representatives of evolution" (Huxley, Haeckel and Spencer) "is evidently, if faith at all, faith at its minimum, even in

* The following letter was written by Darwin, a short time before his death, to a student at Jena, in whose mind the study of Darwin's book had raised religious difficulties, and who wrote to him on the subject:

"SIR: I am very busy, and am an old man in delicate health, and have not time to answer your questions fully, even assuming that they are capable of being answered at all. Science and Christ have nothing to do with each other, except in as far as the habit of scientific investigation makes a man cautious about accepting any proof. As far as I am concerned, I do not believe that any revelation has ever been made. With regard to a future life, every one must draw his own conclusions from vague and contradictory probabilities. Wishing you well, I remain your obedient servant, Charles Darwin." (*Christian Thought*, vol. 1, p. 100.)

Darwin. Between his God of half an eternity ago, who woke just long enough to breathe life into a few material forms or only one, and then fell once more into a slumber so deep that it has not been broken since, and the no-God of Haeckel, and the mysterious It of Spencer, there would really seem to be not much to choose. Himself the moving principle of the universe He first framed, is, we suppose, a true conception ; but this is not, logically and necessarily not, the Creator of the evolutionists. According to them, the universe is essentially automatic and godless. For infinite years the Darwin divinity has given no sign of his existence, is practically non-existent, has ceased to be contemporary ; if not dead, is as good as dead. 'The Great Companion' is not, and we are left alone.'' (Dr. Coles, in *Christian Thought*, vol. 2, p. 428.)

§ 36. *Revelation and Evolution as Taught by Dr. Woodrow.*

Dr. Woodrow has recently advanced a modified hypothesis of evolution as it applies to man, attributing the origin of man's body to evolution, while his soul is the product of immediate creation. His own words are : "There would seem to be no ground for attributing a different origin to man's body from that which should be attributed to animals ; if the existing animal species were immediately created, so was man ; if they were derived from ancestors unlike themselves, so may he have been. . . . As regards the soul of man, which bears God's image, and which differs so entirely not merely in degree but in kind from anything in the animals, I believe that it was immediately created, that we are here so taught ; and I have not found in science any reason to believe otherwise. Just as there is no

scientific basis for the belief that the doctrine of derivation by descent can bridge over the chasms which separate the non-existent from the existent, and the inorganic from the organic, so there is no such basis for the belief that this doctrine can bridge over the chasm which separates the mere animal from the exalted being which is made in the image of God. The mineral differs from the animal in kind, not merely in degree ; so the animal differs from man in kind ; and while science has traced numberless transitions from degree to degree, it has utterly failed to find any indications of transition from kind to kind in this sense. So in the circumstantial account of the creation of the first woman, there are what seem to me insurmountable obstacles in the way of fully applying the doctrine of descent." (*Southern Presbyterian Review*, 1884, p. 356.) And subsequently he adds : "The more fully I become acquainted with the facts of which I have given a faint outline, the more I am inclined to believe that it pleased God, the Almighty Creator, to create present and intermediate organic forms, not immediately but mediately, in accordance with the general plan involved in the hypothesis" (*i.e.*, evolution) "I have been illustrating." (*Southern Presbyterian Review*, p. 366.)

Respecting the hypothesis of evolution in this form, I remark :

1. It is unscientific in that it attributes the origin of woman, body and soul, to immediate creation, while man's body is the product of evolution. In the view of every naturalist, woman is half the species homo—is half the man ; and to state the hypothesis in the language of science, it should read : One half the body of man is the product of evolution, while the other half, with all the soul, is the product of immediate creation.

Such an origin as this, for any species of living beings, is without precedent, even in the wildest speculations of scientists.

2. It is, I think, irreconcilable with the account of man's creation given in Scripture. "And the Lord God formed man of the dust of the ground, and breathed into his nostrils the breath of life, and man became a living soul." (Gen. 2 : 7.) The phrase here rendered "a living soul," literally rendered is "an animal of life"—*i.e.*, a living animal. Jamieson, in his commentary on this verse, writes: "At its first formation the body of man, so exquisitely organized, was no more than a mass of inert matter, till the Lord God endowed it with vitality, and 'breathed into his nostrils the breath of life'—literally, lives; but though in the plural form, it is commonly rendered, life, the natural or organic life, as the phrase usually denotes, 'and man became a living soul'—literally, an animal of life (see v. 19, ch. 1, 20, 24, 30; 10 : 12, 15, 16, where the word is used in this sense); and hence Bishop Warburton paraphrases the passage before us in the following manner: 'He breathed into this statue the breath of life, and the lump of clay became a living creature.'" Dr. McCosh writes: "There are two accounts of the creation of man: one in Gen. 1 : 26. There is counsel and decision: 'Let us make man in our own image.' This applies to his soul or higher nature. The other account is in Gen. 2 : 7: 'And the Lord God formed man of the dust of the ground, and breathed into his nostrils the breath of life; and man became a living soul.' This is man's organic body." (McCosh on Development, p. 35.)

What is affirmed in Gen. 2 : 7 is (1) that God made the inanimate body of man of the dust of the ground; and then (2) by a special act imparted animal life to

that inanimate body. The product of evolution, from the very nature of the process, "descent with modification," is a living thing, possessed at the least of animal life. It may die very early, but at its beginning it must be a living thing. With this passage before us, we have the alternative, either (1) the body God formed was an inanimate body, and to this He imparted animal life, which accords well with Scripture; but there is no evolution possible here; the body is lifeless, "a lump of clay," and life has to be imparted by a special act of God; or (2) the body God formed was possessed of animal life, to which He afterward imparted an immortal soul, which accords with the doctrine of evolution, but is irreconcilable with the Scriptures, rightly interpreted.

§ 37. *Revelation and Evolution in its most Limited Range.*

The hypothesis of evolution, taking it in its most limited range, as excluding inorganic nature on the one hand, and so recognizing the fact that a great gulf separates between the non-living and the living; and excluding also man, on the other hand, and so recognizing the fact that an impassable gulf separates the brutes from immortal man, "made in the image of God," and understanding it as simply "a mode of creation," cannot be considered atheistic. Nor is it irreconcilable, as I think, with the Bible account of the origin of plants and animals in the world. The unfavorable reception which it has met at the hands of Christian men generally is owing, if I mistake not, like that of poor Tray in the old fable, not so much to what it is in itself, as to the company in which they found it.

Experience would seem to prove that the tendency of evolution, in the minds of those who adopt it, is to foster

the conception of our world as "an automatic machine," running itself; and of God as a being afar off—a conception in striking contrast with that conveyed by the Scriptures—"Behold the fowls of the air, for they sow not, neither do they reap, nor gather into barns; yet your Heavenly Father feedeth them." (Matt. 6 : 26.) "Are not two sparrows sold for a farthing? and one of them shall not fall on the ground without your Father. But the very hairs of your head are all numbered." (Matt. 10 : 29, 30.) "In him we live, and move, and have our being." (Acts 17 : 28.) It certainly seems to have had this effect on the mind of Darwin, as is evident from his words addressed to the Duke of Argyll, quoted in § 35.

IV.

THE MOSAIC COSMOGONY.

§ 38. *A Remarkable Fact.*

"History has embalmed for us," writes Professor Huxley, "the speculations upon the origin of living beings, which were among the earliest products of the dawning intellectual activity of man. In those early days positive knowledge was not to be had, but the cravings after it needed, at all hazards, to be satisfied, and according to the country, or the turn of thought of the speculator, the suggestion that all living things arose from the mud of the Nile, from a primeval egg, or from some more anthropomorphic agency, afforded a sufficient resting-place for his curiosity. The myths of paganism are as dead as Osiris or Zeus, and the man who should revive them, in opposition to the knowledge of our time, would justly be laughed to scorn; but the coeval imaginations current among the rude inhabitants of Palestine, recorded by writers whose very name and age are admitted by every scholar to be unknown, have unfortunately not yet shared their fate, but even at this day are regarded by nine tenths of the civilized world as the authoritative standard of fact and the criterion of the justice of scientific conclusions in all that relates to the origin of things, and, among them, of species. In this nineteenth century, as at the dawn of modern physical science, the cosmogony of the semi-barbarous Hebrew is the incubus of

the philosopher and the opprobrium of the orthodox." (Huxley's "Lay Sermons," pp. 277, 278.)

When Professor Huxley states that the book of Genesis—the book which contains "the cosmogony of the semi-barbarous Hebrews"—as he calls them—"is the work of a writer whose very name and age are admitted to be unknown," he is stepping out of his own department of natural science, in which he deservedly ranks high as a teacher, into that of historical and literary criticism, of which, I doubt not, he would himself confess that he knows but little.* So far is this statement from being true, that I hesitate not to affirm that to-day nine tenths of the scholars of Great Britain and America regard the authenticity and genuineness of the book of Genesis as better established than that of any other book that has come down to us from antiquity.

On the other point which his statement covers—viz.: the estimate in which the Mosaic cosmogony is held, to-day, throughout the civilized world, falling as it does within the department of natural science, there is no one more competent to express an opinion than he. And his statement, that while "the myths of paganism are as dead as Osiris or Zeus, and that the man who would revive them in opposition to the knowledge of our time would be justly laughed to scorn," the Mosaic cosmogony "has not shared their fate, but even at this day

* "We are now assured, upon the authority of the highest critics, and even of dignitaries of the church, that there is no evidence that Moses wrote the book of Genesis, or knew anything about it. You will understand that I give no judgment—*it would be an impertinence upon my part to volunteer even a suggestion upon such a subject.* But that being the state of opinion among scholars and the clergy, it is well for the unlearned in Hebrew lore, and for the laity, to avoid entangling themselves in such vexed questions."—*Huxley's "New York Lectures on Evolution," Lecture I.*

is regarded by nine tenths of the civilized world as the authoritative standard of fact, and the criterion of the justice of scientific conclusions, in all that relates to the origin of things," may well challenge our careful consideration. If this be true—and we believe that it is true—it is a very remarkable fact in the history of human thought and opinion ; and it becomes us, in the spirit of a sound philosophy, to ask, and to answer, if we can, the question, Why is it, that while the cosmological speculations of the Egyptians and the Greeks, the two foremost nations of antiquity, have come to be universally regarded as myths, "the cosmogony of the semi-barbarous Hebrews," in the light of this our nineteenth century, controls the thoughts and opinions of nine tenths of the civilized world ? History has a philosophy as well as nature ; and for so remarkable a fact as this there must be some reason ; and it becomes us, in entering upon an examination of the Mosaic cosmogony, to ascertain, if possible, what that reason is.

The strange vitality—*strange* in the estimation of Professor Huxley—of the Mosaic cosmogony is owing, if I mistake not, (1) in part, to its intimate connection with the religion of the Hebrews—a religion which, with variations in non-essentials only, has lived from the very beginning of human history down to the present day, and which, in its Christian form, is the religion of the nations which now dominate the world. Worshippers have long since disappeared from the temples of Osiris and Zeus, while those of the God whom Moses served, and in advocacy of whose worship Genesis was written, are now more thronged, and that by the leaders of the world's civilization, than at any time in the past history of our race. Not only does Moses' cosmogony form a part of the book in which this religion is taught, but it

stands related to this religion, as setting forth a reason why the religion assumes the particular form which it does, of a worship of Jehovah. The cosmogony commences with the declaration, "In the beginning God created the heaven and the earth," on which Bishop Patrick remarks: "Designing to hang the whole frame of his polity upon piety toward God, and to make the Creator of all the founder of his laws, he begins with Him. Not after the manner of the Egyptians and Phœnicians, who bestowed this adorable name upon a great multitude; but he puts in the front of his work the name of the sole cause of all things, the Maker of whatsoever is seen or unseen; . . . . whom therefore he would have them look upon, not only as the enactor of their laws, but of those also which all nature obeys." (Patrick's "Commentary," *in loc.*) Hence it comes that Moses' cosmogony has always been regarded as something more than a mere cosmogony—as part and parcel of the religion which he taught, to endure as long as that religion endures, to be reverently believed wherever that religion prevails.

(2) A second reason for the vitality of the Mosaic cosmogony is to be found in the nature of the cosmogony itself. The origin of all living things in the mud of the Nile, as was believed among the Egyptians, or in a primitive egg, according to Greek mythology, could satisfy the human mind in a condition of childhood only. The creation of all things by an Almighty God is a doctrine which meets every demand of the profoundest philosophy, and may well satisfy man in his maturity.

§ 39. "*In the Beginning*," *according to Moses.*

The Mosaic cosmogony, contained in the first and second chapters of Genesis, commences with the declara-

tion, "*In the beginning God created the heaven and the earth.*"

"*In the beginning*"—*i.e.*, in the beginning or at the outset of the work of creation here recorded. John in his gospel, doubtless referring to this language of Moses, and intending to teach the eternal existence of the Word, writes: "In the beginning *was* the Word"—*i.e.*, the Word existed. In using this phrase the design of Moses seems to have been to carry back the mind of the reader to a period at which "the heaven and the earth" began their existence; and he does this in order to convey, upon the highest authority, the assurance that they had both a beginning and creator; that they did not spring into being by chance, nor, as some of the ancient philosophers taught, exist from eternity.

"*God created.*" The word here rendered "created" does not necessarily mean to make out of nothing; indeed, in so far as I know, there is no word in any language which has invariably such a meaning; but "that a production entirely new, a really creative act, is related in this verse, and not merely a renovation or reconstruction of old and previously existing materials is evident, not only from the whole subsequent context, but from the summary of the processes described in the subsequent narrative, where a different word is used, denoting 'made,' 'reconstructed,' 'arranged.' (Ch. 2 : 3, with Ex. 20 : 11.) The first term signifies to bring into being; the other points only to a new collocation of matter already in existence. . . . On these grounds we are warranted in considering the sacred historian to have selected the terms he has employed for the special purpose of intimating an actual creation out of nothing." (Jamieson's "Commentary," *in loc.*)

"*The heaven and the earth.*" There is no single word

in the Hebrew language corresponding to our English word *universe*. The phrase "the heaven and the earth" is the nearest equivalent to it, and is here doubtless used to signify the whole system of which our earth forms a part: the sun, the planets with their satellites, and the fixed stars, with all that belong to them. So Moses understood the expression, for he afterward wrote: "The Lord made heaven and earth, the sea, and all that in them is." (Ex. 20 : 11.) The Jewish commentators interpret it as denoting "the heavens with all they contain, and the earth with all that belongs to it." Theophilus, one of the early Christian Fathers, writes: "The heavens are mentioned before the earth, to show that God's works are not like ours; for He begins at the top, we at the bottom—that is, He first made the fixed stars and all that belonged to them (so I take the word heaven here to signify), for they had a beginning, as well as this lower world, though they do not seem to be comprehended in the six days' work, which relates only to this planetary world, as I may call it, which hath the sun for its centre."

§ 40. "*In the Beginning*," *according to Science.*

In this opening portion of the Mosaic cosmogony there are two important truths taught us—viz.: (1) "the heaven and the earth," the universe, has not existed from eternity, but had a beginning; and (2) the universe in its beginning was not the work of chance, but a creation of God. On both these points science, in so far as it is able to speak at all, confirms the cosmogony.

1. *The universe had a beginning.* Geology, basing its conclusions upon observed facts, traces back the history of our earth from the condition in which it now is through a succession of changes, to be beginnings of life

in the world ; and then, in the light of very probable conjecture, through an earlier series of changes, back to what must be regarded as the beginning of the universe itself. About the time occupied in all these changes there is room for great difference of opinion ; and so no cautious geologist has attempted to fix that time as measured by years ; but about the changes themselves having a beginning there is no difference of opinion, and no room for difference.

The "new astronomy," as it is popularly called—the astronomy which deals especially with the physical nature and structure of the heavenly bodies as they are made known to us by the spectroscope and improved telescope—testifies to the same effect, that the sun and planets have all had a beginning. It even ventures to attempt to fix the date of the sun's beginning. "We may say," writes Professor Langley, "with something like awe at the meaning to which science points, that the whole past of the sun cannot have been over eighteen million years ; and its whole future radiation cannot last so much more. Its probable life is covered by about thirty million years. No reasonable allowance for the fall of meteors, or for all other known causes of supply, could possibly raise the whole term of its existence to sixty million years. This is substantially Professor Young's view." (Professor Langley, in the *Century* for December, 1884.)

2. *The universe is not the work of chance, but a creation of God.* Astronomy testifies to a wonderful order pervading the universe, mathematical in its accuracy, in so far as the bodies astronomy has to deal with are concerned ; zoology and botany testify to an equally wonderful order prevailing throughout the kingdom of organic nature—a wonderful adaptation of living creatures

to their environments, and of the parts and organs of these living creatures to their functions, which are utterly inconsistent with the idea of their being the product of chance. Instead of countenancing the old hypothesis of "the fortuitous concourse of atoms," some ardent scientists manifest a disposition to run to the other extreme. Thus, Professor Huxley writes: "The conception of the constancy of the order of nature has become the dominant idea of modern thought. To persons familiar with the facts upon which that conception is based, and competent to estimate their significance, it has ceased to be conceivable that chance should have any place in the universe, or that events should depend upon any but the natural sequence of cause and effect. We have come to look upon the present as the child of the past and as the parent of the future; and as we have excluded chance from a place in the universe, so we ignore, even as a possibility, the notion of any interference with the order of nature." (Huxley's "New York Lectures on Evolution," Lecture I.) Avoiding this extreme, the thoughtful scientist of to-day may exclaim, with far deeper feeling than that of David: "I am fearfully and wonderfully made: marvellous are thy works; and that my soul knoweth right well." (Ps. 139 : 14.)

§ 41. *Emergence from Chaos, according to Moses.*

Moses continues his cosmogony with the record, "And the earth was without form, and void (*was waste and void*, New Version); and darkness was upon the face of the deep. And the Spirit of God moved upon (*was brooding upon*, New Version, margin) the face of the waters. And God said, Let there be light, and there was light. And God saw the light, that it was good: and God divided the light from the darkness. And God

called the light Day, and the darkness He called Night. And the evening and the morning were the first day. (*And there was evening and there was morning, one day*, New Version.) And God said, Let there be a firmament (*expanse*, New Version, margin) in the midst of the waters, and let it divide the waters from the waters. And God made the firmament, and divided the waters which were under the firmament from the waters which were above the firmament : and it was so. And God called the firmament Heaven. And the evening and the morning were the second day. (*And there was evening and there was morning, a second day*, New Version.) And God said, Let the waters under the heaven be gathered together unto one place, and let the dry land appear. . . . And God said, Let there be lights in the firmament of the heaven, to divide the day from the night ; and let them be for signs, and for seasons, and for days, and years : and let them be for lights in the firmament of the heaven to give light upon the earth : and it was so. And God made two great lights ; the greater light to rule the day, and the lesser light to rule the night ; He made the stars also. And God set them in the firmament of the heaven to give light upon the earth, and to rule over the day and over the night, and to divide the light from the darkness : and God saw that it was good. And the evening and the morning were the fourth day." (*And there was evening and there was morning, a fourth day*, New Version.) (Gen. 1 : 2–9, 14–19.)

On the expression in verse 2, "And the spirit of God *moved upon* the face of the waters," Jamieson remarks : "Our English version, in its use of the word *moved*, does not give the meaning correctly ; for the word in the original does not convey the idea of pro-

gressive motion, but that of brooding over—cherishing—the act of incubation which a fowl performs when hatching its eggs, and the particular form of the verb implies a continuance of this action. It was not the self-development of powers inherent in matter. The creative movement was made by the will of God ; and as if to refute the doctrine of Pantheism, it is expressly stated that the action was not *in* but *upon* the face of the waters." (Jamieson's "Commentary," *in loc.*)

On the expression in verse 3, "Let there be light," Jamieson remarks : "It is deserving of particular notice that the substantive verb is used here, and not either the words 'create' or 'made.' It was the manifestation of what had been previously in existence—Let light be, or, rather, Light shall be, not the formation of an element, or matter, which had no being at all till the divine command was issued. . . . Where all had been involved in darkness, there was an alternation of light ; and as unbroken gloom had reigned previous to this happy change, so, in describing the physical arrangement that was now established, this natural sequence is preserved, and the evening is reckoned before the morning." (Jamieson's "Commentary," *in loc.*)

§ 42. *Emergence from Chaos, according to Science.*

This record of Genesis is evidently written in the language of common life, as contradistinguished from the more exact language of science ; it speaks of things as they appear, and not necessarily as they really are. (See § 4.)

In the portion of the Mosaic cosmogony now before us there are two important truths—important as parts of a cosmogony—stated, in both of which science confirms the statement of Moses—viz.: (1) The earliest con-

dition of our earth was that commonly spoken of as a chaos, from which the present cosmos has gradually emerged; and (2) the existence of light before the sun appeared.

1. *That the original condition of our earth was that of a chaos*, all geologists are agreed. That the earth was once a confused mass of air and earth and water, destitute of life, and incapable of supporting it, even in its lowest forms—a condition aptly described by the words "waste and void" and with "darkness upon the face of the deep," is one of the settled conclusions of the science of our day. That from this chaotic condition of the earth our cosmos—*i.e.*, our earth in all its beautiful order—has gradually emerged, is a conclusion equally well settled. The very term cosmogony—*i.e.*, the generation of the cosmos, implies this. "That the present is the child of the past," is as true of the earth itself as of each of the nations inhabiting its surface. The general order of this emergence, as Moses describes it, is that adopted by all geologists as the result of their study of nature—viz.: the separation of the waters thenceforth to be suspended in the atmosphere from those that are to remain upon the surface of the earth, followed by a separation of the waters upon the earth's surface, and the gathering together of them into seas, that the dry land might appear; and then, and not till then, the setting of the sun in the heavens to rule over the day.

2. *The existence of light before the sun appeared.* This is a very remarkable statement, especially if we regard it as the statement of "a semi-barbarous Hebrew," made amid "the dawning intellectual activity of man." Nothing like it is to be found among the cosmological speculations of the ancient Egyptians or Greeks; and less than a century ago it was urged as an objection to

the Mosaic cosmogony, that it taught a doctrine at variance with the established order of nature—viz.: the existence of light before the sun—the one great source of all natural light.

Now, many geologists, adopting an hypothesis originally proposed by Lamarck, tell us that our whole solar system once existed as a nebulous mass of widely diffused luminous "star-dust," from which our sun, with all its attendant planetary bodies, have been evolved in the course of ages; so that light must have existed long before the heat with which it is correlated in nature would suffer any portion of the nebulous mass to condense into a comparatively solid body like the sun.

Whether we adopt this hypothesis or not, all geologists agree that there must have been a period in the early history of our earth—its period of chaotic existence, when light from the sun could not have reached its surface, but "darkness must have been upon the face of the deep;" and that this was followed by a second period—the period occupied in the separation of "the waters which were under the firmament from the waters which were above the firmament," and the subsequent "gathering together the waters under the heavens into one place, so that the dry land might appear," during which light from the sun could reach the earth's surface in the form of diffused daylight only. Not until these changes were complete could the sun and moon appear, and begin to "be for signs, and for seasons, and for days, and years." It is true that the teachings of geology on this point can as yet, on scientific grounds alone, be considered as nothing better than very probable theory; yet it is theory so probable as to command the universal assent of geologists. And so we but state a fact when we say that modern science, in so far as

science has anything to say in the case, confirms the cosmogony of Moses on a point at which it was once thought to be at variance with the established order of nature.

§ 43. *The Creation of Plants and Animals, according to Moses.*

Moses' account of the origin of living, organized beings, plants, and animals is in the following words—viz.: "And God said, Let the earth bring forth grass, the herb yielding seed, and the fruit tree yielding fruit after his kind, whose seed is in itself, upon the earth: and it was so. And the earth brought forth grass, and herb yielding seed after his kind, and the tree yielding fruit, whose seed was in itself, after his kind: and God saw that it was good. And the evening and the morning were the third day. (*And there was evening and there was morning, a third day*, New Version.) . . . And God said, Let the waters bring forth abundantly the moving creature that hath life (*swarm with swarms of living creatures*, New Version, margin) and fowl that may fly above the earth in the open firmament of heaven. And God created great whales (*the great sea-monsters*, New Version) and every living creature that moveth, which the waters brought forth abundantly, after their kind, and every winged fowl after his kind: and God saw that it was good. And God blessed them, saying, Be fruitful, and multiply, and fill the waters in the seas, and let fowl multiply in the earth. And the evening and the morning were the fifth day. (*And there was evening and there was morning, a fifth day*, New Version.) And God said, Let the earth bring forth the living creature after his kind, cattle, and creeping thing, and beast of the earth after his kind: and it was so. And God made the beast of the earth after his kind, and cattle

after their kind, and everything that creepeth upon the earth after his kind : and God saw that it was good." (Gen. 1 : 11–13, 20–25.)

This account of the creation of plants and animals is worthy our attention in the following particulars—viz.: (1) It is a creation out of pre-existing materials, and not, like that of the universe, out of nothing ; (2) the origin of life, like the origin of matter, is traced directly to God himself ; (3) that special provision is made that each several kind of plant and animal shall continue its kind by natural generation ; (4) that plants and animals are brought into being not singly, nor in pairs, but in great numbers ; and (5) that this creation is said to have been effected in a certain order. What is the testimony of science on these several points ?

§ 44. *The Creation of Plants and Animals, according to Science.*

1. *As to the creation of plants and animals out of pre-existing materials.* Chemistry declares that plants and animals to-day derive all their materials from the inorganic world. Different as the proximate elements of organic nature, such as lignine, sugar, gelatine, are from those of inorganic nature, its ultimate elements, such as oxygen, hydrogen, carbon, are the same ; and impossible as it may be for the chemist to form these proximate elements out of such materials in his laboratory, we know that they are continually being thus formed in the organisms of living plants and animals, under the operation of that mysterious something we call life.

2. *The doctrine of the spontaneous generation of life, once earnestly defended by many scientists, is now universally abandoned.* On this subject Professor

Drummond writes: "What essentially is involved in saying that there is no spontaneous generation of life? It is meant that the passage from the mineral world to the plant or animal world is hermetically sealed on the mineral side. This inorganic world is staked off from the living world by barriers which have never yet been crossed from within. No change of substance, no modification of environments, no chemistry, no electricity, nor any form of energy, nor any evolution, can endow any single atom of the mineral world with the attribute of life. Only by the bending down into the dead world of some living form can these dead atoms be gifted with the properties of vitality; without this preliminary contact with life they remain fixed in the inorganic sphere forever. It is a very mysterious law which guards in this way the portals of the living world. And if there is one thing in nature more worthy of pondering for its strangeness than another, it is the spectacle of this vast helpless world of the dead, cut off from the living by the law of biogenesis, and denied forever the possibility of resurrection within itself. So very strange a thing, indeed, is this broad line in nature, that science has long and urgently sought to obliterate it. Biogenesis stands in the way of some forms of evolution with such stern persistence that the assaults upon this law for number and thoroughness have been unparalleled. But as we have said, it has stood the test. Nature, to the modern eye, stands broken in two. The physical laws may explain the inorganic world; the biological law may account for the development of the organic; but of the point where they meet, of the strange border-land between the dead and the living, science is silent. It is as if God had placed everything in earth and heaven in the hands of nature, but had reserved a point at the genesis of life

for His direct appearing." ("Natural Law in the Spiritual World," pp. 68, 69.) See § 27.

3. *According to Moses, at their creation special provision was made that each several kind of plant and animal should continue its kind by natural generation.* On this point science, long at variance with the Mosaic cosmogony, is now in harmony therewith. Professor Huxley writes: "As regards the second problem offered to us by Redi, whether xenogenesis obtains side by side with homogenesis, whether, that is, there exists not only the ordinary living things giving rise to offspring which run through the same cycle as themselves, but also others, producing offspring which are of a totally different character from themselves, the researches of two centuries have led to a different result. That the grubs found in galls are no product of the plants upon which the galls grow, but are the result of the introduction of the eggs of insects into the substance of the plants, was made out by Vallisnieri, Raumer, and others before the end of the first half of the eighteenth century. The tape-worms, bladder-worms, and flukes continued to be a stronghold of the advocates of xenogenesis for a much longer period. Indeed, it is only within the last thirty years that the splendid patience of Von Siebold and other helminthologists has succeeded in tracing every such parasite, often through the strangest wanderings and metamorphoses, to an egg derived from a parent actually or potentially like itself; and the tendency of inquiries elsewhere has all been in the same direction." ("Lay Sermons," p. 367.)

Subsequently speaking of the pebrine—*i.e.*, the disease which attacked the silk-worm, and for a time threatened the destruction of the silk culture in France a few years ago, he writes: "Such being the facts respecting the

pebrine, what are the indications as to the method of preventing it? It is obvious that this depends upon the way in which the panhistophyton"—the parasite which causes the pebrine—"is generated. If it may be generated by abiogenesis or by xenogenesis within the silkworm or its moth, the extirpation of the disease must depend upon the prevention of the occurrence of the conditions under which this generation takes place. But if, on the other hand, the panhistophyton is an independent organism, which is no more generated by the silkworm than the mistletoe is generated by the oak or apple-tree on which it grows, though it may need the silkworm for its development in the same way as the mistletoe needs the tree, then the indications are totally different. The sole thing to be done is, to get rid of and keep away the germs of the panhistophyton. As might be imagined from the course of his previous investigations, M. Pasteur was led to believe that the latter was the right theory; and guided by that theory, he devised a method of extirpating the disease which has proved to be completely successful wherever it has been properly carried out." ("Lay Sermons," p. 375.) In the case of the higher forms of plant and animal life, that the offspring was the product of a parent like itself has been long known and universally admitted. That this same law obtains among the lower orders, even the lowest, science has now demonstrated.

4. *According to Moses, plants and animals, with the exception of man, were not brought into being as single individuals, or as pairs at the most,* but when God spake He said: "Let the waters swarm with swarms of living creatures." The result of such a work of creation was at once to people the air, the earth, and seas with many individuals or pairs of every species intended to

inhabit them. To such a creation as this the fossiliferous rocks testify. Not at one point on the earth's surface only does a particular species appear, but at many points at the same time, and these points far distant from each other. The wide distribution of certain species possessing little or no power of locomotion—*e.g.*, the oyster, at the present day, furnishes a serious difficulty in the way of the evolutionist (§ 30). And when we go back and find this wide distribution existing from the beginning, the difficulty becomes almost insurmountable.

5. *The Mosaic cosmogony presents us with a certain order of creation*—viz.: (1) "Grass, herbs, and trees"—*i.e.*, the vegetable kingdom, and this before the sun, moon, and stars were "set in the firmament of heaven to give light upon the earth;" (2) fishes, including all the numerous inhabitants of the waters, together with "great sea-monsters," and "birds," or flying creatures, including insects; (3) "cattle, and creeping things, and beasts of the earth."

Plants alone are capable of feeding directly upon inorganic matter. Animals, although the ultimate composition of their food is the same with that of plants, are incapable of digesting that food until it has undergone the preliminary organization which it acquires in assuming a vegetable form. On this point Professor Guyot writes: "The most important function of the plant in the economy of nature is, with the aid of the sun's light, to turn inorganic into organic matter, and thus prepare food for the animal. Nothing else in nature does this important work. The animal cannot do it, and starves in the midst of an abundance of the materials needed for the building up of its body. . . . The plant, therefore, is the indispensable basis of all animal life; for though animals partially feed upon each other,

ultimately the organic matter they need must come from the plant." ("Creation," pp. 88, 89.) The Paleozoic Age, when the crust of the earth was so much warmer than it now is that the climate of Arctic regions was tropical, and when the atmosphere was heavily laden with watery vapor and carbonic acid, was the age of a gigantic vegetation, the remains of which constitute our older coal-fields, some of them of great thickness and of vast extent. That the waters were swarming with inhabitants before what we know as land-animals appeared, and, further, that great sea-monsters and other amphibious animals preceded "cattle and beasts of the earth," geology testifies with equal distinctness. Thus it will be seen that science testifies not only to an order of creation, but to an order, in its general outline, the same with that given by Moses.

When Professor Huxley writes: "The oldest fossils in the Silurian rocks are exuvia of marine animals; and if the view which is entertained by Principal Dawson and Dr. Carpenter respecting the nature of the eozoon (*i.e.*, dawn-animal) be well founded, aquatic animals existed at a period as far antecedent to the deposition of the coal as the coal is from us; inasmuch as the eozoon is met with in those Laurentian strata which lie at the bottom of the series of stratified rocks" ("New York Lectures on Evolution," Lecture I.), and would have us hence infer that Moses is mistaken in representing vegetable life as antecedent to animal life; he forgets "the immense deposits of carbon," in the form of graphite, "in the Laurentian, which would seem to bespeak a profusion of plant life in the sea or on the land, or both, second to that of no other period that succeeded, except that of the great coal formation." (Dawson's "Earth and Man," p. 26.)

§ 45. *The Creation of Man, according to Moses.*

Moses' account of the creation of man is as follows—viz.: "And the Lord God formed man of the dust of the ground, and breathed into his nostrils the breath of life; and man became a living soul," literally, a creature of life, or living creature. "And the Lord God caused a deep sleep to fall upon Adam, and he slept; and He took one of his ribs, and closed up the flesh instead thereof. And the rib, which the Lord God had taken from man, made He a woman, and brought her unto the man. And Adam said, This is now bone of my bones, and flesh of my flesh: she shall be called Woman, because she was taken out of man. Therefore shall a man leave his father and his mother, and shall cleave unto his wife: and they shall be one flesh." (Gen. 2 : 7, 21–24.) In the first chapter of Genesis we have this additional statement respecting the creation of man: "And God said, Let us make man in our image, after our likeness: and let them have dominion over the fish of the sea, and over the fowl of the air, and over the cattle, and over all the earth, and over every creeping thing that creepeth upon the earth. So God created man in His own image, in the image of God created He him; male and female created He them. And God blessed them, and God said unto them, Be fruitful, and multiply, and replenish the earth, and subdue it: and have dominion over the fish of the sea, and over the fowl of the air, and over every living thing that moveth upon the earth." (Gen. 1 : 26–28.)

In this account of the creation of man there are four particulars worthy our special attention—viz.: (1) He is the last made of the inhabitants of our earth; and with his making the work of the world's creation closes;

(2) in his creation God made but a single pair, from whom all of human kind must have descended by natural generation; (3) the bodies of man and woman, though made alike out of previously existing material, are made, that of man out of "the dust of the ground;" that of woman out of a rib taken from the body of man; and this for the purpose of furnishing a most solemn sanction to the marriage relation, and so, in the human race, establishing the family; (4) man was made in "the image of God," that he might have dominion over the work of God's hands.

§ 46. *The Creation of Man, according to Science.*

1. *Man is the last made of the inhabitants of earth, and with his making the work of creation closes.* "And on the seventh day God ended His work which He had made; and He rested on the seventh day from all His work which He had made." (Gen. 2 : 2.)

On this subject the Duke of Argyll writes: "The evidence of geology has always been that among all the creatures which have in succession been formed to live upon this earth, and enjoy it, man is the latest born. This great fact is still the fundamental truth in the history of creation; that history, as geology has revealed it, has been a history of successive creations and of successive destructions, old forms of life perishing and new forms appearing, so that the whole face of nature has been many times renewed. But until very lately it was supposed that these vast cycles of changes had been finally completed before man appeared. And as regards fresh creations, this supposition is still supported by the testimony of science. So far as we yet know, no new form of life has been created since the highest form was made. But it now appears that since that event many old forms

have died. The cycle of creation has closed, but not the cycle of destruction." ("Primeval Man," pp. 113, 114.)

2. *In his creation of man God made but a single pair, from whom all of human kind must have descended by natural generation.* The unity of the human race, thus clearly asserted by Moses, is a doctrine which, within the last fifty years, has been assailed in such a way as to lead to a thorough re-investigation of the whole subject by some of the leading scientists of the day.

Professor Cabell closes an exhaustive examination of the whole subject with the words: "The unity of the human race must be considered a fundamental and an accepted truth. Every department of knowledge has been searched for evidence, and all respond with an uniform testimony. The physical structure, constitution, and habits of the race—the mode in which it is produced, in which it exists, in which it perishes—everything that touches its mere animal existence, demonstrates the absolute certainty of its unity, so that no other generalization of *physiology* is more clear and more sure. Rising one step, to the highest manifestation of man's physical organization—his use of language and the power of connected speech—the most profound survey of this most complex and tedious part of knowledge conducts the inquirer to no conclusion more indubitable than that there is a common origin, a common organization, a common nature, underlying and running through this endless variety of a common power, peculiar to the race, and to it alone. Thus a second science—philology—has borne its marvellous testimony. Rising one more step, and passing more completely to a higher region, we find the rational and moral nature of men of every age and kindred absolutely the same. Those great

faculties by which man alone—and yet by which every man—perceives that there is in things that distinction which we call true and false, and that other distinction which we call good and evil, upon which distinctions and which faculties rests at last the moral and intellectual destiny of the entire race, belonging to us as men, without which we are not men, with which we are the head of the visible creation of God. So has a *third science* delivered its testimony. If we rise another step, and survey man as he is gathered into families and tribes and nations, with an endless variety of development, we still behold the broad foundations of a common nature reposing under all—the grand principles of a common being ruling in the midst of all. So a fourth, and the youngest of the sciences, *ethnology*, brings her tribute. And now from this lofty summit survey the whole track of ages. In their length and in their breadth scrutinize the recorded annals of mankind. There is not one page on which one fact is written which favors the historical idea of a diversity of nature or origin, while the whole scope of human story involves, assumes, and proclaims, as the first and grandest historic truth, the absolute unity of the race." ("Unity of Mankind," pp. 285, 286.) See also § 13.

3. *The bodies of man and woman, though made alike out of previously existing material, are made—that of man out of "the dust of the ground;" that of woman out of a rib taken from the body of man. And this for the purpose of furnishing a most solemn sanction to the marriage relation, and so in the human race to establish the family.* On the Mosaic record of the creation of woman Bishop Patrick remarks: "God did not form Eve out of the ground, as He had done Adam, but out of his side, that He might breed the greater love

between him and her, as parts of the same whole. Whereby He also effectually recommended marriage to all mankind, as founded in nature." And on Moses' words, "And brought her unto the man," he adds: "Not merely by conducting her to the place where Adam was; but the Divine Majesty, which now appeared to Eve, presented and gave her to him to be his wife. God Himself made the espousals—if I may so speak—between them, and joined them together in marriage. . . . And by creating and joining together but one man and one woman in the beginning, intended that mankind should be so propagated, and not by polygamy." (Patrick's Commentary.)

The sacredness of the marriage relation, and so of the family, all history declares to be fundamental to progress in civilization; and with equal distinctness declares polygamy to be fatal to national prosperity. The marriage relation, such as Moses describes as instituted of God, is a thing utterly unknown among savages. It is a marked characteristic of the savage to despise and degrade the female sex. The condition of woman among them, with rare exceptions, is no better than that of a slave or beast of burden. Indeed, so intolerable is it, that it is not an uncommon occurrence for female infants to be put to death as soon as they are born, and that by the hands of their own mothers. It is only among the most highly civilized nations, and as a result of that civilization, that woman has recovered the rank and station which, according to this account of Moses, God gave her in the beginning. These facts furnish a good and sufficient reason for God's departure from the common order of creation in His making of woman. Certainly, the story must be regarded as a very strange invention—if it was an invention—on the part of a "semi-barbarous Hebrew," as

Professor Huxley would have us believe that Moses was. In the circumstances of the case, "the invention is more incredible than the fact."

4. *Man was made in "the image of God," that he might have dominion over the work of God's hands.* Without attempting a full and particular exposition of the phrase, "In our image, after our likeness," I remark this much, at the least, is implied therein, that man was intended and fitted to occupy the position of "the lord of creation;" and to this end he was endowed with powers and faculties very different from and greatly superior to those of other creatures.

On this point Professor Huxley writes: "There is no one who estimates more highly than I do the dignity of human nature and the width of the gulf in intellectual and moral matters which lies between man and the whole of the lower creation." ("Origin of Species," Lecture IV.)

Max Müller writes: "However much the frontiers of the animal kingdom have been pushed forward, so that the line of demarcation between man and the lower animals seemed at one time to depend on a mere fold in the brain, there is one barrier which no one has yet ventured to touch—the barrier of language. We cannot tell as yet what language is. It may be a production of nature, a work of human art, or a Divine gift. But to whatever sphere it belongs, it would seem to stand unsurpassed—nay, unequalled in it by anything else. If it be a production of Nature, it is her last and crowning production, which she reserved for man alone. If it be a work of human art, it would seem to lift the human artist almost to the level of a Divine Creator. If it be the gift of God, it is God's greatest gift; for through it God speaks to man, and man speaks to God in worship,

prayer, and meditation." (Max Müller, as quoted in Jamieson's Commentary.)

Professor Dana writes: "In the appearance of man the system of life, in progress through the ages, reached its completion, and the animal structure its highest perfection. Another *higher* is not within the range of our conception. For the vertebrate type, which began during the paleozoic, in the prone or horizontal fish, becomes erect in man, and thus completes, as Agassiz has observed, the possible changes in the series to its last term. An erect body and an erect forehead admit of no step beyond. But besides this, man's whole structure declares his intellectual and spiritual nature. His forelimbs are not organs of locomotion, as they are in all other mammalians; they have passed from the *locomotive* to the *cephalic* series, being made to subserve the purposes of the head; and this transfer is in accordance with a grand law in nature, which is at the basis of grade and development. The cephalization of the animal has been the goal in all progress; and in man we mark its highest possible triumph. Man was the first being that was not finished on reaching adult growth, but was provided with powers for indefinite expansion, a will for a life work, and boundless aspirations to lead to an endless improvement. He was the first being capable of an intelligent survey of Nature, and comprehension of her laws; the first capable of augmenting his strength by bending nature to his service, rendering thereby a weak body stronger than all animal force; the first capable of deriving happiness from truth and goodness; of apprehending eternal right; of reaching toward a knowledge of self and of God; the first, therefore, capable of conscious obedience or disobedience of moral law, and the first subject to debasement through his appetites and

moral nature. There is, hence, in man a spiritual element in which the brute has no share. His power of indefinite progress, his thoughts and desires, that look onward even beyond time, his recognition of spiritual existence and of a divinity above—all evince a nature that partakes of the infinite and divine. Man is linked to the *past* through the system of *life*, of which he is the last, the completing creation. But, unlike other species of that closing system of the *past* (significantly the *zoic* era of geological history), he, through his spiritual nature, is far more intimately connected with the opening *future*." (Dana's "Geology," pp. 578, 579.)

§ 47. *The Age of the World.*

When geologists first claimed for our earth a far greater age than the six or seven thousand years which had long been believed to measure the interval between its creation and the present day, the claim was generally disallowed, on the ground of the uncertain, often visionary, character of the speculations in which they habitually indulged. But the geology of to-day is very different from the geology of a century ago. As now pursued it is as thoroughly Baconian in its methods, and its conclusions are as worthy of credit, as those of any other of the sciences. Starting with the unquestionable truth that our earth is all the time undergoing change in some part or other through the operation of such agencies as river-currents and floods, volcanoes and earthquakes, the operation of coral polyps in building up reefs, and of stone-boring mollusks and waves in tearing them to pieces again, and postulating the operation of these agencies in the past substantially as in the present, the geologist seeks to construct a physical history of the earth, to answer the question, How has the earth come to have its present

form and structure? The legitimacy of such a method as this no thoughtful person can question. And among the most certain conclusions to which this method leads us is the one that the age of our world is vastly greater than six or seven thousand years.

This conclusion is based upon such well-ascertained facts as these—viz.: (1) Continents and sea-bottoms have changed places more than once in ages past, as is proved by the occurrence of fossil corals and mollusks far up on the mountain-sides and on the high-lands of the earth; and this must have occurred before man began his life here, as it would have been impossible for that life to have continued through such convulsions. (2) Several different systems of organic life have, in succession, existed upon the earth, and passed away before man was brought into being. This is proved by the fact that these several systems have left their fossil remains entombed in the rock-strata, with no human remains among them. (3) The great thickness of the fossiliferous rock-strata in which no human remains occur—in Pennsylvania forty thousand feet (Dana's "Geology," p. 145)—plainly demands a long period for their deposition and their subsequent subjection to all the changes which they have evidently undergone.

It is true, as the Duke of Argyll remarks, that "chronology is of two kinds: first, time measured by years, and, secondly, time measured only by an ascertained order or succession of events. The one may be called time-absolute, the other time-relative. Now, among all the sciences which afford us evidence on the antiquity of man one, and one only, gives us any knowledge of time-absolute, and that is history. From all the others we can gather only the less definite information of time-relative. They can tell us of nothing more than of the order

in which certain events took place. But of the length of interval between those events neither archæology nor geology nor ethnology can tell us anything." ("Primeval Man," pp. 78, 79.)

It is true also that geologists of high standing in their profession have blundered egregiously when they have attempted to state geological time in years—*e.g.*, Sir Charles Lyell, when he fixed the age of the Mississippi Delta at one hundred thousand years. In doing this he assumed that the rate of formation of the delta had been uniform for all time, while the very nature of the agency—that of the river current and floods—by which it must have been formed, taken in connection with what geology teaches respecting the formation of the Mississippi Valley itself, ought to have satisfied him that such could not possibly have been the case. The Mississippi Valley was formed originally by the upheaval of the two great mountain ranges which bound it on the east and west. As these mountain ranges, whether upheaved rapidly or slowly, must have emerged covered with a great thickness of silt and mud from the sea-bottom, the amount of delta material washed away by rain and flood, and carried down by the river current, in a given time, must have been far greater when the valley was first formed than it is now. It should not surprise us, then, that Lyell's one hundred thousand years have, in the hands of later and more cautious reasoners, dwindled to four thousand four hundred.

Notwithstanding all this, the general conclusion remains unquestionable, that our world was in being long before man was created; and as a necessary consequence, its age must be vastly greater than the six or seven thousand years once allowed. In view of this fact, the question at once presents itself, How is this great age to

be harmonized with the record contained in the first chapters of Genesis?

§ 48. *The Popular Method of Reconciliation.*

The method of reconciling the conclusions of geology, especially its conclusion respecting the great age of the world, with the statements of the first chapters of Genesis most popular with Christian scientists in our day, is one which assumes that the word *day* in these chapters is to be understood not in the sense of a period of twenty-four hours, but in the sense of an *age*, or long period of time, characterized by something peculiar to it.

That the Hebrew word *yom*, here translated day, is often used in this wider sense in the Scriptures is unquestionable. "As in the *day* of temptation in the wilderness" (Psalm 95 : 8), where the day was one of forty years. "In that *day* there shall be a fountain opened to the house of David, and to the inhabitants of Jerusalem for sin and for uncleanness," where the *day* covers the whole Christian dispensation. And in this very cosmogony of Moses (Gen. 2 : 4): "In the *day* that the Lord God made the earth and the heavens," it evidently covers the whole period of the cosmogony. Understood in this sense, Moses' days of creation correspond to the eras of geology; and the "morning and evening" are but the opening and closing portions of those eras.

Adopting this interpretation of the word day, Professor Dana writes: "The account"—*i.e.*, Moses' account—"recognizes in creation two great eras, each of three days—an inorganic and an organic.

"Each of these eras opens with the appearance of light; the *first*, light cosmical; the *second*, light from the sun, for the special use of the earth.

"Each era ends in a day of two great works, the two

shown to be distinct by being severally pronounced good. On the *third* day—that closing the inorganic era—there was, first, *the dividing of the land from the waters*, and afterward *the creation of vegetation*, or the institution of a kingdom of life, a work widely diverse from all preceding it in the era. So on the sixth day, terminating the organic era, there was, first, *the creation of mammals*, and then a second far greater work, totally new in its grandest elements—*the creation of man*.

"The arrangement is, then, as follows:

"I. *The Inorganic Era.*

"1st Day.—Light cosmical.

"2d Day.—The earth divided from the fluid around it, or individualized.

"3d Day. { 1. Outlining of the land and water,
2. Creation of vegetation.

"II. *The Organic Era.*

"4th Day.—Light from the sun.

"5th Day.—Creation of the lower orders of animals.

"6th Day. { 1. Creation of mammals.
2. Creation of man.

"In addition, the last day of each era includes one work typical of the era, and another related to it in essential points, but also prophetic of the future. Vegetation, while, for physical reasons, a part of the creation of the third day, was also prophetic of the future organic era, in which the progress of life was the grand characteristic. The record thus accords with the fundamental principle in history, that the characteristic of an age has its beginnings with the age preceding. So, again, man, while like other mammals in structure, even to the

homologies of every bone and muscle, was endowed with a spiritual nature, which looks forward to another era, that of spiritual existence. The *seventh* day—the day of rest from the work of creation—is man's period of preparation for the new existence ; and it is to promote this special end that, in strict parallelism, the Sabbath follows man's six days of work." (Dana's "Geology," pp. 769, 770.)

A harmony of genesis and geology, substantially the same with that given above, is adopted by the late Professor A. Guyot, in his recently published "Creation," to which I would refer the reader who may wish for further details.

§ 49. *A Second Method of Reconciliation.*

A second method of reconciling the conclusions of geology, especially its conclusion respecting the great age of the world, with the statements of the first chapters of Genesis, is, to understand Gen. 1 : 1—"In the beginning God created the heaven and the earth"—to refer to a period long anterior to that of the events recorded in the subsequent portions of the chapters ; that Moses makes this statement for the purpose of teaching us who was the Creator of all things, and who, therefore, was the proper object of man's adoration and worship ; that then the long ages demanded by geology followed ages in which the rock-strata, with all their fossils, were deposited, with the exception of those in which human remains occur ; and of these Moses says nothing, for the sufficient reason that their history has nothing to do with the religious history of man ; that when God begins the subsequent setting in order of the earth which is to fit it for the inhabitation of man, Moses resumes the narrative in the words, "And the earth was without form

and void" (*waste and void*, New Version), "and darkness was upon the face of the deep"—thus describing the chaotic condition to which the earth was reduced at the time—"and the spirit of God moved upon" (*was brooding upon*, margin) "the face of the waters." Then follows an account of God's preparation of the earth as a dwelling-place for man, and the re-stocking it with plants and animals adapted to its improved condition; many of these plants and animals being the same in kind with those existing in preceding ages, others entirely new; and then the story of man's creation is given us, with which the cosmogony properly closes.

The idea that Gen. 1 : 1—"In the beginning God created the heaven and the earth"—refers to a period long anterior to that of the events recorded in the subsequent portions of the chapter is not a new idea, first suggested by the wish to make the narrative of Moses conform to the demands of geology. It was advocated by Augustine and Theodoret among the early Christian Fathers, and among modern commentators by Bishop Patrick, who died in 1707. He writes: "How long all things continued in mere confusion, after the chaos was created, before light was extracted out of it, we are not told. It might be (for anything here revealed) a great while; and all that time the mighty spirit was making such motions in it as prepared, disposed, and ripened every part of it, for such productions as were to appear successively in such spaces of time as are here and afterward mentioned by Moses, who informs us, that after things were so digested and made ready (by long fermentation, perhaps) to be wrought into form, God produced every day, for six days together, some creature or other, till all was finished, of which light was the very first." (Patrick's Commentary on Gen. 1 : 5.)

1. One objection to this explanation of the Mosaic record is, it requires us to believe in the immediate exercise of creative power, accomplishing in a brief space what in ordinary circumstances would require a long time—the re-stocking of the earth with all the vast variety of animals in the space of two days—a work which had previously occupied ages in perfecting. In answer to this we say: In creation there is implied a direct intervention of Divine power in the affairs of the world; and in other instances where such intervention has occurred this same peculiarity often appears. In our Lord's miracle of stilling the tempest, the record is: "There arose a great tempest in the sea, insomuch that the ship was covered with the waves. . . . Then He arose and rebuked the winds and the sea; and there was a great calm." (Matt. 8 : 24–26.) Here the Divine word of power accomplished in a moment what in ordinary circumstances it would have required hours to effect. In his miracle of turning water into wine at Cana we have an illustration of the same truth in closer analogy with the case under consideration. "He who does every year prepare the wine in the grape," writes Trench, "causing it to drink up and expand with the moisture of earth and heaven, to take this up into itself, and transmute it into its own nobler juices, did now gather together all this slow process into the act of a single moment, and accomplish in an instant what ordinarily He does not accomplish but in many months." ("Notes on the Miracles," p. 91.)

2. A second objection to this explanation is, that it requires us to accept as true the destruction of all the plants and animals—certainly of all that could not survive in the midst of the chaos described in verse 2—existing upon the earth at the close of the geological era

immediately preceding that of man, and a re-stocking of the earth in connection with man's creation ; a supposition which, it is said, involves an extravagant expenditure of power on the part of God irreconcilable with our ideas of His perfect skill and wisdom. To this it may be answered :

(1) We know far too little of the elements of the problem under examination to pronounce a confident judgment upon it. In the case of a tree, the leaves are the active living portions of the organism ; the trunk and branches are comparatively inert ; and this to such an extent that some eminent botanists have been almost ready to treat the leaf as the individual plant, and the tree when in full leaf as a colony or nation of plants. Now, every year, the myriads of leaves on a tree die, and are cast aside, to be replaced by new leaves the succeeding season. At first sight there seems to be here as extravagant an expenditure of power as in the case we are considering. Why not suffer the old leaves to remain, and retaining their vitality, do the life-work of the tree year after year ? To this question the botanist answers : The organism of the leaf, which in the spring is full of vigor and in perfect working order, in doing the work of a single summer becomes clogged and worn out, and thus unfitted to continue the work for a longer time ; and for this reason, in the wise economy of nature, it is thrown aside, and a new leaf takes its place. Something like this same law would seem to obtain in organic nature at large. " There are certain conceptions," writes the Duke of Argyll, " which seem to rise unbidden in the mind from the facts which geology has revealed touching the history of creation. One of these is that each new organic form, or each new variety of birth, seems always to have been introduced with a wonderful energy of life.

. . . The vigor which prevails in the youth of an individual is but the type of the vigor which has always prevailed in new and rising species. All the complex influences which led to their being born led also to their being fat and flourishing. That which caused them to arise at all must have had the effect of causing them to arise in strength. The condition of all the lower races of men is in absolute contrast with everything which this law demands. Everywhere and in everything they exhibit all the characteristics of an energy which is spent, of a force which has declined, of a vitality which has been arrested." ("The Unity of Nature," pp. 428, 429.) If this be true, that organic forms and species of plants and animals, like the individuals of which they are made up, in the ordinary course of nature grow old and unfitted for their work, and need to be replaced by new creations, may not the close of the era immediately preceding the creation of man have been one of these periods of necessary change when that which had become *old* needed to be replaced by the *new?*

(2) The destruction of the then existing plants and animals would seem to be necessarily involved in the breaking up of the surface strata of the earth, and so the necessity of a new creation when order is restored. This breaking up of the earth's surface, and a breaking up immediately preceding the creation of man, is a matter of supreme importance to man, if he is to lead the life of a civilized being upon the earth. But for this the riches of the earth—the vast coal fields of the carboniferous age, the granites, the sandstones, and other valuable building materials, and most of the metallic ores, would have lain forever beyond his reach. In attempting to reconcile the destruction of plants and animals and the new creation supposed with the wisdom of God,

we have then, in the facts just stated, a second ground on which we may rest—the ground that "the end justifies the means."

3. To this explanation it may be objected that the order of creation as given in the first chapter of Genesis —viz.: first, plants, then fish and flying creatures, and, lastly, land animals—is that which the records of the fossiliferous rocks declares to have been the order observed when those rocks were deposited, and so of the long ages of which this explanation supposes Moses to say nothing. This is true, in general, though in the present state of geological science it cannot be regarded as established in all the particulars that Professor Guyot in his "Creation" would seem to imply. This order, in general, was rendered necessary by the way in which the original chaos was developed into the cosmos of the period. If our earth was a second time reduced to a condition of chaos, and then, developing under the operation of creative power in the space of six natural days into our present cosmos, is to be restocked, the same reasons which required a certain order in the first creation will, of necessity, require the same order to be observed in the new creation.

4. That the earth has been subject to great convulsions at various points in its history is beyond all reasonable question. "It is perfectly certain," writes Professor Huxley, "that at a comparatively recent period of the world's history—the cretaceous epoch—none of the great physical features which at present mark the surface of the globe existed. It is certain that the Rocky Mountains were not. It is certain that the Himalaya Mountains were not. It is certain that the Alps and Pyrenees had no existence. The evidence is of the plainest possible character; and it is simply this: we find raised up on the

flanks of these mountains, elevated by the forces of upheaval which have given rise to them, masses of cretaceous rocks, which formed the bottom of the sea before those mountains existed. It is therefore clear that the elevatory forces which gave rise to the mountains operated subsequently to the cretaceous epoch, and that the mountains themselves are largely made up of the materials deposited in the sea which once occupied their place. As we go back in time, we meet with constant alternations of sea and land, of estuary and open ocean." ("New York Lectures on Evolution," Lecture I.) At how recent a period great changes in the surface of the earth have occurred we cannot say with certainty; but this I know from my own personal observations, that on the western flank of the Alleghany Mountains in Virginia the fossil corals and gorgonias and sponges are of species now living in the Gulf of Mexico. This explanation, then, does not involve anything in the present condition of the earth's surface at variance with ascertained facts.

To those who adopt it, one great recommendation of the explanation we have been considering is, that it harmonizes all that geology demands respecting the age of the world with the Mosaic account of creation as effected in six days, understanding those days to have been natural days of twenty-four hours each. This interpretation of the term day, it is said, is a more natural one than that which understands it to mean an indefinite period, an era, and better agrees with the terms in which Moses records the institution of the Sabbath: "And God blessed the seventh day, and sanctified it; because that in it He rested from all His works which God created and made" (Gen. 2 : 3); and more especially with the language of the Fourth Commandment—"Remember the Sabbath day to keep it holy, . . . for in six days the Lord made

heaven and earth, the sea, and all that in them is, and rested the seventh day ; wherefore the Lord blessed the Sabbath day, and hallowed it." (Ex. 20 : 8, 11.)

§ 50. *The Proper Position for the Christian Apologist.*

Does the reader ask, Which of these methods of reconciling the cosmogony of Moses with the demands of geology as to the great age of the earth shall I adopt ? I answer, Neither of them *as a finality.* Either of them will fully answer the purposes of Christian apology, will suffice to show that there is no real conflict on this point between the Mosaic cosmogony and the fairly established conclusions of the geologist. The time for making out a complete "harmony" of the two has not yet come. That the reader may see more distinctly the exact nature of the difficulty in making out a harmony, I would ask him to remember that the Mosaic cosmogony is given us in the language of common life—a language in which things are described as they appear (§ 4), while the geological record is in the language of science ; and a harmony of the two involves the correct translation of the one into the language of the other.

The nature of the work to be done will be best apprehended by the examination of a particular instance in which a probable harmony has been established. In Joshua 10 : 13, 14 we read : "So the sun stood still in the midst of the heaven" ("in the division of the heavens above the horizon" (*Bush*), and so, apparently, "upon Gibeon"), "and hasted not to go down about a whole day. And there was no day like that before it or after it, that the Lord hearkened unto the voice of a man : for the Lord fought for Israel."

On the expression in our English Bible, "And hasted not to go down about a whole day," Professor Bush, who

forty years ago was considered the finest Hebrew scholar in America, writes: "This should be 'hasted not to go down *as at the perfect day*'—*i.e.*, as it naturally does when the day is finished, when the ordinary space of a day has elapsed. This we conceive to be the true force of the original, though aware that it requires one to be acquainted with the Hebrew in order to feel the force of the evidence in favor of such a rendering. Such an one, however, upon turning to the original of Ex. 31 : 18; Deut. 16 : 6; 24 : 13; Ps. 73 : 19, will find, if we mistake not, ample proof of the correctness of this interpretation. The meaning, as we understand it, is not that the day was miraculously lengthened out to the extent of twelve hours, or another whole day, but simply that when the ordinary duration of a day was completed, the sun still delayed his setting, but for how long a time we are not informed; long enough, however, we may presume, for fully accomplishing the object for which the miracle was granted." (Bush on Joshua, *in loc.*) And Dr. A. Clarke writes: "And the sun stood still in the (upper) hemisphere of the heaven, and hasted not to go down, when the day was complete—that is, though the day was then complete, the sun being in the horizon, the line that to the eye constituted the mid-heaven, yet it hasted not to go down, was miraculously sustained in its then almost setting position; and this seems still more evident from the moon appearing at that time, which it is not reasonable to suppose could be visible in the glare of light occasioned by a noonday sun." (Clarke's Commentary, *in loc.*) Thus much toward a correct rendering of the Bible record.

Turning now to the translation of this record, written in the language of common life, into the language of science. Inasmuch as the ordinary way in which the sun

and moon are made to rise and set is by the revolution of the earth upon its axis, and assuming, as our fathers did, that this was the only way, the proper translation would be—so the earth stopped in its revolution upon its axis for several hours toward the close of the day. To the credibility of such an event as this infidel scientists have made two objections, perplexing to the older commentators—viz.: (1) That had such a day occurred it must have extended over half the globe, and that the half in which all the civilized nations of antiquity were embraced; and so we have a right to expect that some notice of it would have reached us from other sources, especially as the Chaldeans and Egyptians were noted for their devotion to astronomy; and (2) that when we take into account all that science teaches us is necessarily involved in stopping the revolution of the earth upon its axis, even for an hour, we must regard this as the most stupendous miracle recorded in the Scriptures; and it has been intimated that had Joshua understood the true nature of our solar system, or had he written under inspiration of a Being who did understand it, he would never have made such a record as this.

Within the present century scientists have learned that the revolution of the earth upon its axis is not the only means by which a body like the sun may be, in appearance, raised above the horizon. What is termed mirage, caused by the coming in of a dense stratum of air at some distance above the earth's surface, will produce this same effect. "The particular form of mirage known as *looming* consists in an excessive apparent elevation of the object. A most remarkable case of this sort occurred on the 26th of July, 1798, at Hastings. From this place the French coast is fifty miles distant; yet from the seaside the whole coast of France from

Calais to near Dieppe was distinctly visible, and continued so for three hours." ("Chambers's Encyclopædia.") In the summer of 1856 the author witnessed a mirage on Lake Michigan, by which the Manitou Islands, some twenty miles distant from his point of observation, were raised, in appearance, thirty degrees, or two hours, above the horizon.

Knowing these facts, were I to attempt to translate the record of Joshua's miracle into the language of science, I would not write, So the earth stopped in its revolution upon its axis, but so the Lord caused a mirage by which the sun and moon were made to remain for a season, in appearance, above the horizon; and thus lengthened out the day, for the Lord fought for Israel. This interpretation does not in any way affect the truly miraculous character of the event recorded; but it does explain a particular recorded, otherwise inexplicable—viz.: that the moon as well as the sun remained above the horizon; and it effectually answers the cavils (1) that this remarkable day is not mentioned by the Chaldean or Egyptian astronomers, inasmuch as a lengthening of the day produced in this way would not extend many miles from its centre at Gibeon; and (2) the stupendous character of the event disappears, and the miracle takes its place naturally in the class of miracles recorded in the Old Testament Scriptures.

We have thus made out a probable "harmony" between this record of Joshua and the demands of science, such as was impossible a century ago. And this has been done (1) by correcting the English version in the light of a more careful study of the Hebrew original; and (2) by science, in its progress, making us acquainted with truth unknown to our fathers; not that our fathers never witnessed a mirage, but they

knew not how to explain it—could not tell how it was produced.

That the authorized English version of Genesis is not perfect all will admit. The new version, by a very slight change, the correctness of which no one will question —viz.: the substitution in ch. 1 : 21 of "great sea-monsters" for "great whales"—has entirely removed an alleged discrepancy of the Mosaic cosmogony, as interpreted by Dana and Guyot, with the cosmogony of science. No longer ago than 1876 Professor Huxley wrote : "If it be true that all varieties of fishes, and the great whales, and the like made their appearance on the fifth day, we ought to find the remains of these animals in the older rocks—in those which were deposited before the carboniferous epoch. Fishes we do find in considerable numbers and variety ; but the great whales are absent." ("New York Lectures on Evolution," Lecture I.) The whale, as we now use the term, is a warm-blooded mammal, and its remains do not occur in the strata Professor Huxley refers to ; but the remains of "great sea-monsters" do, as every geologist knows. That the cosmogony of geology is yet very incomplete, and very uncertain, too, especially as regards the element of *time*, every intelligent geologist will admit. To be convinced of this, one needs but to read Professor Huxley's address before the British Geological Society, published in his volume of "Lay Sermons," more particularly the part of it concerning "geological cotemporaneity."

In such circumstances the construction of a perfect "harmony" of the two records is out of the question. What we can do, and all we can safely do at present is, to collate the two from time to time, carefully distinguishing between the established truths of science and the unproved hypotheses of enthusiastic scientists, noting

the points in which they agree, and quietly leaving seeming discrepancies to be explained in the future. This is the course which the author has pursued for many years; and in those years he has seen science, in more instances than one, adopt the very doctrines of the Mosaic cosmogony which at one time it denounced—*e.g.*, the doctrines of "the unity of mankind" (§ 46) and the laws of "biogenesis" and "homogenesis." (§ 44.)

Creation vs. Evolution.

The Mosaic cosmogony has long been understood to embody the doctrine of creation, as contradistinguished from that of evolution. As already remarked, "the hypothesis of evolution, taken in its most limited range, as excluding inorganic nature on the one hand, and so recognizing the fact that a great gulf separates between the non-living and the living, and excluding also man, on the other hand, and so recognizing the fact that an impassable gulf separates the brute from immortal man 'made in the image of God,' and understanding it as simply 'a mode of creation,' . . . is not irreconcilable with the Bible account of the origin of plants and animals" (see § 37); but, certainly, it does not furnish as natural an interpretation as the old theory of creation does. As evolution in this form is persistently urged upon our acceptance by some who firmly believe in the divine inspiration of Genesis, our discussion of the Mosaic cosmogony would be incomplete without some examination of this claim; and to this we now ask the reader's attention.

§ 51. *Huxley's Objection to Creation as Supernatural.*

"The hypotheses respecting the origin of species which profess to stand upon a scientific basis, and as such alone

demand serious attention, are of two kinds. The one, the 'special creation' hypothesis, presumes every species to have originated from one or more stocks, these not being the result of the modification of any other form of living matter, or arising by natural agencies, but being produced as such by a supernatural creative act. The other, the so-called 'transmutation' hypothesis, considers that all existing species are the result of pre-existing species, and those of their predecessors, by agencies similar to those which at the present day produce varieties and races, and therefore in an altogether natural way; and it is a probable, though not a necessary consequence of this hypothesis, that all living beings have arisen from a single stock. With respect to the origin of this primitive stock or stocks, the doctrine of the origin of species is obviously not necessarily concerned. The transmutation hypothesis, for example, is perfectly consistent with either the conception of a special creation of the primitive germ or with the supposition of its having arisen, as a modification of inorganic matter, by natural causes." ("Lay Sermons," pp. 279, 280.)

1. Professor Huxley has here correctly stated the question between the hypotheses of creation and evolution as a question concerning the origin of *species*. Varieties are constantly being produced under the operation of changes of climate, and all the varied agencies we embrace under the general name of "cultivation;" and they are constantly disappearing, too, when neglected, under the operation of the general law of "reversion to type." The appearance and disappearance of varieties is taking place, from time to time, under our eyes; and though but imperfectly understood as yet, it has long been a subject of study to man. Not so with species. The appearance of a new species man has never seen.

"Some varieties of form," writes the Duke of Argyll, "are effected in a few animals by domestication and by constant care in the selection of peculiarities transmissible to the young. But these variations are all within certain limits, and wherever human care relaxes or is abandoned the old forms return, and the selected characters disappear. The founding of new forms by the union of different species, even when standing in close natural relation to each other, is absolutely forbidden by the sentence of sterility which nature pronounces and enforces upon all hybrid offspring. And so it results that man has never seen the origin of any species. Creation by birth is the only kind of creation he has ever seen; and from this kind of creation he has never seen a new species come." ("Primeval Man," pp. 39, 40.)

In the Mosaic cosmogony creation, as we have seen, is of two kinds—viz.: the making out of nothing, as in his words, "In the beginning God created the heaven and the earth," and the making out of pre-existing materials, as in his words, "God created man in His own image," of which creation he afterward says, "And the Lord God formed man of the dust of the earth." It is with creation in the latter sense alone we have to do at present; and in this sense creation is just as natural a way of originating a species as evolution is. If man has never seen a species originated by creation, neither has he ever seen a species originated by evolution. The origination of species, in whatever way it has been effected, belongs to an era that is long passed. The testimony of science on this point is at one with that of Moses. (§ 46.) If all have seen new individuals evolved, developed, from a living germ, under the operation of vital forces, so have all seen new individuals created out of inorganic matter, "the dust of the earth," under the

operation of these same vital forces. No phenomenon is more familiar than that of making a plant, in all the perfection of its completed, living structure, out of water, carbonic acid, and ammonia.

On Professor Huxley's statement, that creation is *supernatural*, we remark, creation is supernatural only on the condition that we banish God from nature. The term supernatural, as used by Spencer, Huxley, and other writers of the class to which they belong, is "in the highest degree ambiguous and deceptive. It assumes that the system of 'nature' in which we live and of which we form a part is limited to purely physical agencies, linked together by nothing but mechanical necessity. There might indeed be no harm in this limitation of the word nature if it could possibly be adhered to. But it is not possible to adhere to it, and that for the best of all reasons, because even inanimate nature, as we habitually see it and are obliged to speak of it, is not a system which gives us the idea of being governed and guided by mechanical necessity. No wonder men find it difficult to believe in the supernatural, if by the supernatural they mean an agency which is nowhere present in the visible and intelligible universe, or is not implicitly represented and continually reflected there; for indeed, in this sense, no Christian can believe in the supernatural, in a creation from which the creator has been banished, or has withdrawn himself. On the other hand, if by the supernatural we mean an agency which, while ever present in the material and intelligible universe, is not confined to it, but transcends it, then indeed the difficulty is not in believing it, but in disbelieving it. No man can really hold that the material system which is visible or intelligible to us is anything more than a fragment of a part. No man can believe that its existing

arrangements of matter and force are self-caused, self-originated, and self-sustained. It is not possible, therefore, so to 'crib, cabin, and confine' our conceptions of nature as to exclude elements which essentially belong to what is called the supernatural. And there is another reason why it is impossible to adhere to such conceptions of the natural, and that is, that it would compel us to exclude the mind of man, and indeed the lesser minds of all living things, from our scientific definitions of nature, and to establish an absolute and rigorous separation between all of these and the world in which they move and act. We have seen not only how impracticable such a separation is, but how false it is to the facts of science. This same condemnation must fall on every conception of the universe which assumes this separation as not only important, but fundamental. Yet this is the very separation on which those philosophers absolutely depend who condemn what they call the supernatural in our conceptions and explanations of the world." ("Unity of Nature," pp. 274, 275.)

§ 52. *Huxley's Objection to Creation as Subject to no Law.*

"A phenomenon is explained when it is shown to be a case of some general law of nature; but the supernatural interposition of the Creator can, by the nature of the case, exemplify no law; and if species have arisen in this way, it is absurd to attempt to discuss their origin." ("Lay Sermons," p. 282.)

Creation, if it be the work of an almighty and wise creator, and wrought with a special end in view—and such is the character of the creation which is generally believed to be taught in the Mosaic cosmogony—is as fully subject to law as evolution can possibly be. The

proof of this statement is to be found in the fact that it furnishes us with as simple and complete an explanation of "the gradual advance in the type of living creatures and the natural grouping of plants and animals as any system of evolution can."

Let us examine a case of creation—creation in the sense of making out of pre-existing material—as closely analogous to that of the origin of species as our limited experience can furnish us—viz.: the case of the various forms of habitation, or house, which man has constructed for himself. The bark hut, the log cabin, the substantial farm-house, the brown-stone city residence, and the marble palace have succeeded each other in regular order, from "the primordial to the most perfect," as civilization has advanced. But these are not the only variations we meet with. In Russia houses are built with thick walls and with openings small and few in number, and capable of being tightly closed. In the southern United States houses are built with many and large doors and windows, and open piazzas. In Venezuela they are built on piles, so as to be safe from floods. In China they are slight structures of bamboo, and in some parts of Africa hollow hemispheres of dried mud. These are all variations determined by "environment." Man's wants have led him to build houses for other purposes than his own inhabitation; and hence we have barns, and warehouses, and cotton factories, and railroad depots, and churches, and court-houses, and forts, each differing from all the others in certain particulars, the exact nature of their "differentiation" being determined by the purpose they were intended to serve. In all these different forms of structure there are certain "homologies" which arrest our attention, such as their all possessing floors, and walls, and roof, and openings of some kind

or other ; and there are, at the same time, differences, which adapt each to some particular end or use. There is an order which pervades the whole ; and these homologies and differences would furnish a basis for a natural classification of houses, if we were disposed to make such classification.

How shall we account for all this ? Had we no knowledge of the way in which this result has been produced, some might say the bark hut "evolved" the log cabin, and the log cabin "evolved" the substantial farm-house, and the Venezuelian house built upon piles was the result of "the survival of the fittest ;" and they might say this for many of the same reasons that similar assertions are made respecting orders and species in the organic world. In this instance, however, none will say this, because we all know that this orderly variation is the result of human power, acting under the guidance of human intelligence, and for the attainment of a definite end. All these different structures are the product of man's creative power, and not of evolution, natural or artificial. And there is evidently a law that has governed this creation—viz.: the law of adaptation to a specific end, that is just as truly a law, and just as certain in its operation as the law of "the survival of the fittest," or any other law which the evolutionist has imagined to govern the origin of species.

§ 53. *Huxley's Objection to Creation as Implying an Extravagant Expenditure of Divine Power.*

"A section a hundred feet thick" of a certain rock stratum in England "will exhibit, at different heights, a dozen species of ammonites, none of which passes from its particular zone of limestone or clay into the zone below it, or into that above it ; so that those who adopt the doctrine of a *special* creation must be prepared to

admit that at intervals of time, corresponding with the thickness of those beds, the Creator thought fit to interfere with the natural course of events, for the purpose of making a new ammonite. It is not easy to transplant one's self into the frame of mind of those who can accept such a conclusion as this on any evidence short of absolute demonstration." ("Lay Sermons," p. 281.)

On this objection of Professor Huxley I remark:

1. Instead of using the simple term "creation" to designate a mode of the origin of species, he uses the expression "special creation," and in this he is followed by most evolutionists in writing on the subject. With the atheistic evolutionist this is well enough, but not so with the theistic evolutionist, who regards evolution "as a mode of creation." The origination of a species by evolution is as much a "special creation" in his view of the matter as the origination of a species in any other way. The proper term, if any qualifying word is to be used, is not "special," but "immediate." Immediate creation is the only proper correlative to creation by evolution.

2. The force of Professor Huxley's objection rests entirely upon a misconception of the nature of God and the nature of His connection with our world during the period of the Mosaic cosmogony. According to Scripture, God is everywhere present and ever active in the affairs of the world. This truth Paul taught the Athenians in his words—"In Him" (God) "we live, and move, and have our being." (Acts 17 : 28.) And our Lord taught the same doctrine with even greater emphasis—"Are not two sparrows sold for a farthing? and one of them shall not fall on the ground without your Father. But the very hairs of your head are all numbered." (Matt. 10 : 29, 30.) The era of creation, the era of the origin of species, the

era covered by the Mosaic cosmogony, has passed. It closed with the creation of man. (§ 46.) During that period it is fair to infer that God was just as everywhere present and ever active in the work of creation as He is in the present era in the work of Providence. To have brought into being successively and after short intervals a number of ammonites was at that time no "interference with the natural course of events," for that was the era of creation. If there are a hundred different species of animals to be brought into being, it will call for no greater expenditure of power to create them in succession than to create them all at once; and if they are, in their structure, specially adapted to certain conditions of a gradually improving world, wisdom would require that each should be created just when and where the improving world becomes fitted to furnish it a home.

§ 54. *Points at which the Hypothesis of Evolution Breaks Down.*

Besides the objections to the hypothesis of evolution presented in our separate consideration of it, there is an additional one which presents itself when we examine the claims to our acceptance of evolution and creation as competing claims, and that is, that evolution fails us at two, if not three most important points in making out a complete cosmogony—viz.: (1) At the beginning of the existence of the matter of the world. That the world had a beginning science testifies in unmistakable terms; and evolution can give us no account of that beginning. We are compelled to fall back upon the explanation contained in the words, "In the beginning God *created* the heaven and the earth." (Gen. 1 : 1.) (2) At the beginning of life. "No conclusion of modern science is more widely received or more confidently maintained

than that which teaches that in the early history of our planet life was unknown. Not only was it not actual, but it was not possible. Life then was not, but life now is. Life then had a beginning. What was that beginning? and whence?" (Wainwright's "Scientific Sophism," ch. 8.) Here, again, evolution is dumb, and Darwin is compelled to begin his series with "certain primordial living beings." (3) At the origin of man, bearing as he does "the image of God." It is true that Darwin and Huxley have attempted to trace, or, rather, to imagine, the evolution of man from some lost form of anthropoid ape; but most of our sober scientists to-day regard what Huxley calls "the great gulf in intellectual and moral matters which lies between man and the whole of the lower creation" as an impassable gulf to any and every method of evolution. At these three points—and they are most important points in any system of cosmogony, far more so than the passage of any one species of plant or animal to the species next above it—evolution utterly fails us, and creation furnishes the only intelligible and credible explanation which has ever been given.

In his article on "The Origin of Species," Professor Huxley has a beautiful passage, to which I will ask the reader's attention. Speaking of growth-development in its earlier stages, he writes: "Examine the recently laid egg of some common animal, such as a salamander or a newt. It is a minute spheroid, in which the best microscope will reveal nothing but a structureless sac, enclosing a glairy fluid, holding granules in suspension. But strange possibilities lie dormant in that semi-fluid globule. Let a moderate supply of warmth reach its watery cradle, and the plastic matter undergoes changes so rapid and yet so steady and purpose-like in their suc-

cession that one can only compare them to those operated by a skilled modeller upon a formless lump of clay. As with an invisible trowel, the mass is divided and subdivided into smaller and smaller portions, until it is reduced to an aggregation of granules, not too large to build withal the finest fabric of the nascent organism. And then it is as if a delicate finger traced out the line to be occupied by the spinal column, and moulded the contour of the body, pinching up the head at one end, the tail at the other, and fashioning flank and limb in due salamandrine proportions in so artistic a way that, after watching the process hour by hour, one is almost involuntarily possessed by the notion that some more subtile aid to vision than an achromatic would show the hidden artist, with his plan before him, striving with skilful manipulation to perfect his work." ("Lay Sermons," pp. 260, 261.) This "hidden artist, with his plan before him," is just what the doctrine of creation brings to our knowledge, working not in these variations of growth-development alone, but in all the variations of nature as well—a living Creator, and not a dead, insensate law.

§ 55. *Conclusion.*

Returning now to the question with which we started, Why is it that while the cosmological speculations of the Egyptians and the Greeks—the two foremost nations of antiquity—have come to be universally regarded as myths, the cosmogony of Moses, in the light of this our nineteenth century, "controls the thoughts of nine tenths of the civilized world"? We answer, in addition to the reason already given, that it is so intertwined with the record of what nine tenths of the civilized world regard as the only true religion, that it must be believed as widely as that religion prevails; there is a second reason,

which the reader is now prepared to appreciate—viz.: that while science, in its progress, has shown the cosmogonies of the Egyptians and the Greeks to be incredible and puerile, it has shown, more and more clearly, the correctness, in all important particulars, of the cosmogony of Moses. When, for a time, there has seemed to be some discrepancy between the conclusions of science and the statements of Moses—and this has occurred more than once—further and more thorough investigation has always removed that discrepancy, and this to such an extent that if the geologist attempts to-day to write out a scientific cosmogony, he finds himself compelled to make it, in all its leading particulars, the cosmogony of Moses.

V.

THE PENTATEUCH.*

§ 56. "*The Higher Criticism.*"

The first five books of the Old Testament Scriptures, called by the Jews "the Torah"—*i. e.*, the law, or "Torath Mosheh"—*i. e.*, the Law of Moses, are by Christian writers generally styled the Pentateuch.

The manuscripts of the Pentateuch form a single roll, or volume, and are divided not into books, but into larger and smaller sections. The division into five books, as we have it in our English Bible, was probably made by the Greek translators in preparing the Septuagint, as the titles of the several books are of Greek and not Hebrew origin.

As far back as we can trace its history, the Pentateuch has been regarded by Jewish as well as Christian writers, with rare exceptions, as written by Moses, and as credible history. Of late this opinion has been assailed under the guise of what is popularly styled "the higher criticism."

What is this higher criticism, and what does it profess? What it is, is a question we will be better prepared to answer at a later stage of this discussion. What it professes, is to judge of and decide all questions respecting the interpretation, the authorship, and the credibility

* The substance of this paper was originally delivered as three discourses in the First Presbyterian Church, Norfolk, in June, 1883, and subsequently published in pamphlet form.

of the several parts of Scripture, just as we would similar questions respecting any other book. In the words of Robertson Smith, one of the ablest among the British advocates of this higher criticism, "the ordinary laws of evidence and good sense must be our guides. And these we must apply to the Bible, just as we should do to any other ancient book." ("The Old Testament in the Jewish Church," Lecture I.) Rightly understood, no one can object to such a proceeding as this. How the higher critics understand it we shall see in the course of our investigation.

What are the conclusions to which the higher critics have come in applying their criticism to the Scriptures? To this question it is impossible to give a definite answer, for no two of them agree in their conclusions. Confining our attention to the Pentateuch:

Professor Robertson Smith comes to the conclusion that a small part of Exodus—viz.: ch. 21–23—and the first eleven chapters of Deuteronomy were written by Moses; but by far the larger part of the Pentateuch was written in the days of Josiah—was, in fact, "the book of the law" found in repairing the Temple (see 2 Kings 22), eight hundred years after Moses' day; and the remainder is made up of traditions first reduced to writing after the Captivity in Babylon, probably by Ezra, two hundred years later still—these last-mentioned portions being ascribed to Moses, in order to give them greater authority among the Jews.

The conclusions to which Professor Crawford H. Toy, of Harvard, the latest American writer on the side of "the higher criticism," comes, I will give you in his own words. In his "History of the Religion of Israel" he writes:

"A comparatively large law book was written (Deu-

teronomy, about B.C. 622); and this, in accordance with the ideas of the times, which demanded the authority of ancient sages and lawgivers, was ascribed to Moses. . . . After various law books had been written they were all gathered up, sifted, and edited about the time of Ezra (B.C. 450) as one book. This is substantially our present Law (*Tora*) or Pentateuch" (pp. 6, 7).

"Nations do not easily change their gods; it is not likely that Moses could or would introduce a new deity. But as the Israelites believed that he had made some great change, it may be that through his means the worship of Yahwe became more general—became, in fact, in a real sense, the national worship. This would not necessarily mean that no other deities were worshipped. . . . Still less would it mean that there was only one God—that is, that all other pretended gods were nothing. This is what we believe, and what the later Israelites (about the time of the Exile and on) believed; but David and generations after him thought that Kemosh and Dagon and the rest were real gods, only not gods of Israel. Exactly what Moses' belief was we do not know. Probably, it may be said, he thought, as people in his day generally did, that there were a great many gods, that each nation had its own deity or deities; but he wished Israel to worship only Yahwe. And, in point of fact, they did remain faithful to Yahwe, till at last they abandoned all others" (p. 24).

"If we cannot suppose that the Pentateuch is correct history, then we do not know precisely what Moses did for his people. Did he try to make them more humane as well as more spiritual? It seems that in those days they were half barbarians. Was Moses a reformer like the Athenian Solon? It is hard to say. . . . From all that we do know we are led to believe that what Moses did

was rather to organize the people and give them an impulse in religion than to frame any code of laws or make any great change in their institutions. In after years it became the fashion to think of him as the author of almost all the religious customs of the land ; as the divinely appointed lawgiver who received his instructions (*Tora*, the Israelites called it) from the mouth of Yahwe himself. But it is not very important for us to be able to say that Moses did just this and that. Under the guidance of God Israel grew in wisdom, and worked out a great *Tora*, an instruction in righteousness ; and it matters little to us whether it was Moses or somebody else who had the chief part in it. But it is probable that he was a great man, and did much for his people" (pp. 25, 26).

" *The March from Goshen to Canaan.*—After leaving Egypt the Israelites seem to have moved from place to place in the northern part of Arabia, where they spent some time before reaching Canaan. Their route is described in a general way in the books of Deuteronomy (1–3 and 10 : 6, 7), Exodus (14–19), and Numbers (10–14, 20–22) ; and there is a list of stations (an itinerary) in Numbers 33. But these were written so long after the events occurred that we cannot rely on their correctness. Whether, in leaving Goshen, they crossed the upper part of the Red Sea, or skirted the Sirbonian Lake, or went some other way, there is at present no means of determining. There was in later times a firm belief among the Israelites that they had spent some time at Mount Sinai, in the peninsula called by the Greeks and Romans Arabia Petræa, and that there the law was given by God through Moses. We know now that it was not there that God gave Israel its law ; but the people, or a part of them, may have stayed there awhile. Thence

they marched northward toward the Dead Sea, and perhaps approached their new land in two divisions—one on the east and one on the west of the sea" (p. 27).

I have quoted thus largely from Dr. Toy's book for two reasons: (1) It is the first attempt made, in so far as I know, to bring the conclusions of the higher criticism to the attention of the mass of the people. His "History of the Religion of Israel" was prepared for the use of Sabbath-schools, is published by the Unitarian Sunday-school Society, Boston; and as the secretary of that society states in the *Century Magazine* for July, 1885, is one of three books in common use with the advanced classes in the Sunday-schools of that denomination; and (2) it seems to me that Dr. Toy has but honestly and fairly carried out the methods of the "higher criticism" to their legitimate conclusions. And it is important in some cases that a man should see beforehand whither certain principles and methods of criticism will lead him, that thus he may be induced to give a careful and thorough examination of them at the outset.

§ 57. *The Question Stated.*

I do Dr. Toy no injustice, I think, when I state as his conclusions: (1) That there is no sufficient reason for believing that Moses wrote any part of the Pentateuch, even the small portion which Professor Smith assigns him; and (2) that the Pentateuch is not "correct" or credible history.

In opposition to this the common faith of most Jewish and Christian writers alike is briefly expressed in the words—"The law was given to Moses." The long-established belief of the Church—*traditional* belief, as the higher critics like to call it—is that the Pentateuch was written by Moses, and is inspired in the sense in

which Peter defines that word—"Holy men of God spake as they were moved by the Holy Ghost" (2 Pet. 1 : 21), and is therefore credible history.

Which of these conclusions shall we accept—that of Dr. Toy, or the common faith of the Church? Let the principle professedly followed by the higher critics as a fundamental principle of sound criticism—viz.: to judge of questions concerning the Scriptures just as we would judge of similar questions respecting any other book—decide.

There is a book bearing the title of "Julius Cæsar's Gallic Wars" which is universally received—by the higher critics as well as others—as written by the man whose name it bears, and as credible history. I select this book, because its author, Julius Cæsar, sustains to his history very much the same relation that Moses does to the Pentateuch: he was an eye-witness and a principal actor in most of the events which he records. Why do we receive this book as authentic—*i. e.*, as written by the man whose name it bears; and credible—*i.e.*, worthy to be believed? Mainly for the reasons:

1. The book in several passages claims to have been written by Julius Cæsar, and to be true history.

2. It has been quoted and referred to by writers in every age, from Cæsar's day to the present, as authentic and credible.

3. It bears internal marks of having been written by Cæsar, and of being true history.

Let us apply these rules of judging to the case of Moses and the Pentateuch.

§ 58. *The Pentateuch claims Moses as its Author, and to be True History.*

This claim is made in such passages as the following —viz.: "And Moses came and told the people all the words of the Lord, and all the judgments: and all the people answered with one voice, and said, All the words which the Lord hath said will we do. And *Moses wrote* all the words of the Lord." (Ex. 24 : 3, 4.) "And the Lord said unto *Moses*, *Write thou these words:* for after the tenor of these words I have made a covenant with thee and with Israel." (Ex. 34 : 27.) "And *Moses wrote* their goings out according to their journeys by the commandment of the Lord; and these are their journeys according to their goings out." (Num. 33 : 2.) This is the introduction to the itinerary of Israel's travels in the wilderness, of which Dr. Toy explicitly denies the Mosaic authorship, and says: "It was written so long after the events occurred, that we cannot rely on its correctness."

"And *Moses wrote this law*, and delivered it unto the priest the sons of Levi, which bare the ark of the covenant of the Lord, and unto the elders of Israel. And Moses commanded them, saying, At the end of every seven years, in the solemnity of the year of release, in the feast of tabernacles, when all Israel has come to appear before the Lord thy God in the place which he shall choose, thou shalt read this law before all Israel in their hearing." (Deut. 31 : 9–11.) Of a compliance with this requirement thus publicly to read the law, we have an account in the eighth chapter of Nehemiah, where we are told that the reading continued from "morning until midday."

"And it came to pass, when *Moses had made an end of writing* the words of this law in a book, until they

were finished, that Moses commanded the Levites, which bare the ark of the covenant of the Lord, saying, Take this book of the law, and put it in the side of the ark of the covenant of the Lord your God, that it may be there for a witness against thee. For I know thy rebellion, and thy stiff neck: behold, while I am yet alive with you this day, ye have been rebellious against the Lord; and how much more after my death?" (Deut. 31: 24–27.) The book here mentioned is doubtless the book found in the temple in Josiah's day (see 2 Chron. 34), about which the higher critics have written so much.

It is true that in none of the passages quoted above does Moses claim to have written all of the Pentateuch; but, fairly interpreted, he certainly does claim to have written the most important parts of it, and some of the very parts of which the higher critics deny his authorship.

§ 59. *Quotations of the Pentateuch as Authentic and Credible.*

Before proceeding to cite these quotations, I would ask the reader to remark the fact that the Bible is not one book, written by one man, and at one time, but is a collection of many books, written by different men, at different times, during a period of fifteen centuries. The Old Testament contains all the extant literature of a great nation for a period of a thousand years.

1. Beginning with the oldest of these books, other than the five books ascribed to Moses—viz.: the book of Joshua, who for a large part of his life was a contemporary and intimately associated with Moses, and succeeded him in the leadership of Israel—we read: "The Lord spake unto Joshua the son of Nun, . . . Be thou strong and very courageous, that thou mayest observe to

do according to all *the law, which Moses* my servant commanded thee : turn not from it to the right hand or to the left, that thou mayest prosper whithersoever thou goest. This book of the law shall not depart out of thy mouth ; but thou shalt meditate therein day and night, that thou mayest observe to do according to all that *is written* therein." (Joshua 1 : 7, 8.)

And here let me remark, in passing, to dispose of a silly cavil, that the brief chapter with which the book of Deuteronomy closes, and which contains an account of the death and burial of Moses, was doubtless written by Joshua, and belongs rather to the book of Joshua than to that of Deuteronomy, the first mentioned of these books being but a continuation of the history given us in the last mentioned.

In the book of Judges, which continues the history of Israel for a period of three hundred years from the date at which the book of Joshua closes, we read : "Now these are the nations which the Lord left, . . . to prove Israel by them, to know whether they would hearken unto the commandments of the Lord, which He commanded their fathers *by the hand of Moses.*" (Judges 3 : 1–4.)

The 105th and 106th Psalms contain a brief recapitulation of the chief incidents in the history of Israel, as given in the Pentateuch, cited as grounds of thanksgiving to God on the part of Israel. The 90th Psalm bears the title of, "*A Prayer of Moses the Man of God.*" "The correctness of the title which ascribes this psalm to Moses is confirmed by its unique simplicity and grandeur ; its appropriateness to his time and circumstances ; its resemblance to the law in urging the connection between sin and death ; its similarity of diction to the poetic portions of the Pentateuch, without the

slightest trace of imitation or quotation ; its marked unlikeness to the Psalms of David, and still more to those of later date ; and, finally, the proved impossibility of plausibly assigning it to any other age or author." (J. A. Alexander.)

David's parting charge to Solomon is in the words : "I go the way of all the earth : be thou strong therefore, and show thyself a man ; and keep the charge of the Lord thy God, to walk in His ways, to keep His statutes, and His commandments, and His judgments, and His testimonies, as it is written in *the law of Moses*, that thou mayest prosper in all that thou doest, and whithersoever thou turnest thyself." (1 Kings 2 : 2, 3.)

In his prayer at the dedication of the Temple, Solomon urges as a reason why God should hear the prayers of Israel : "For thou didst separate them from among all the people of the earth, to be thine inheritance, as thou spakest by the hand of *Moses thy servant*, when thou broughtest our fathers out of Egypt, O Lord our God ;" and he follows the prayer with a blessing of the people, in the words : "Blessed be the Lord, that hath given rest unto His people Israel, according to all that He promised : there hath not failed one word of all His good promise, which He promised by the hand of *Moses His servant*." (1 Kings 8 : 53, 56.)

In the account of the reformation effected in the days of King Hezekiah, in whose reign the prophet Isaiah lived and prophesied, we read : "He removed the high places, and brake the images, and cut down the groves, and brake in pieces *the serpent that Moses had made :* for unto those days the children of Israel did burn incense to it : and called it Nehushtan." (2 Kings 18 : 4.) Of Moses making this brazen serpent we have an account in Numbers 21 : 8, 9.

At a later date, and shortly before the Captivity in Babylon, King Josiah, in giving direction for observing the passover, says: "So kill the passover, and sanctify yourselves, and prepare your brethren, that they may do according to the word of the Lord by *the hand of Moses.*" And in the account of the observance of that passover we read: "And they removed the burnt-offerings, that they might give according to the divisions of the families of the people, to offer unto the Lord, as it is written in *the book of Moses.*" (2 Chron. 35 : 6, 12.)

2. As instances of the recognition of the Mosaic authorship of the Pentateuch and its historic credibility by the prophets, take the following—viz.:

By Isaiah, who lived before the Captivity: "Then he remembered the days of old, *Moses*, and his people, saying, Where is he that brought them up out of the sea with the shepherd of his flock? where is he that put his Holy Spirit within him? That led them by the *right hand of Moses* with his glorious arm, dividing the waters before them, to make himself an everlasting name." (Isaiah 63 : 11, 12.)

By Daniel, who lived during the Captivity: "Yea, all Israel have transgressed thy law, even by departing, that they might not obey thy voice; therefore the curse is poured upon us, and the oath that is written in *the law of Moses* the servant of God, because we have sinned against him. And he hath confirmed his words, which he spake against us, and against our judges that judged us, by bringing upon us a great evil: for under the whole heaven hath not been done as hath been done upon Jerusalem. As it is written in *the law of Moses*, all this evil is come upon us." (Dan. 9 : 11–13.)

By Malachi, who lived after the restoration, and whose prophecy closes the Old Testament Scriptures: "Re-

member ye *the law of Moses* my servant, which I commanded unto him in Horeb for all Israel, with the statutes and judgments." (Mal. 4 : 4.)

3. Turning now to the New Testament, we have the testimony of the apostles in such words as these—viz.:

Of John : "*The law was given by Moses.*" (John 1 : 17.)

Of Philip : "And Philip findeth Nathanael, and saith unto him, We have found him, of whom *Moses in the law*, and the prophets, did write, Jesus of Nazareth, the son of Joseph." (John 1 : 45.)

Of James : "And after they had held their peace, James answered, saying : For *Moses* of old time hath in every city them that preach him, being read in the synagogues every Sabbath day." (Acts 15 : 21.)

Of Jude, or "Judas, not Iscariot," as he is called : "Even as Sodom and Gomorrah, and the cities about them in like manner, giving themselves over to fornication, and going after strange flesh, are set forth for an example, suffering the vengeance of eternal fire. . . . Woe unto them ! for they have gone in the way of Cain, and ran greedily after the error of Balaam for reward, and perished in the gainsaying of Core." (Jude 7, 11.) The story of Sodom and Gomorrah, of Cain and Balaam, and Core or Korah, is found in the Pentateuch alone.

Of Peter : "And Peter answered unto the people : . . . *Moses truly said unto the fathers*, A Prophet shall the Lord your God raise up unto you of your brethren, like unto me ; him shall ye hear in all things whatsoever he shall say unto you." (Acts 3 : 22.) Quoted from Deut. 18 : 15 :

Of Paul : "Nevertheless death reigned from *Adam to Moses*, even over them that had not sinned after the similitude of Adam's transgression." (Rom. 5 : 14.)

"Moreover, brethren, I would not that ye should be ignorant, how that all our fathers were under the cloud, and all passed through the sea, and were all *baptized unto Moses* in the cloud and in the sea." (1 Cor. 10 : 1, 2.) "Now as Jannes and Jambres *withstood Moses*, so do these also resist the truth." (2 Tim. 3 : 8.) The Epistle to the Hebrews, generally ascribed to Paul as its author, is, in large measure, a commentary on *the law of Moses*, and in all it says of Abraham, and Melchisedec, and Aaron, and of the patriarchs in its illustration of the nature of faith, in ch. 11, it takes for granted the truth of the history contained in the Pentateuch.

4. The testimony of our Lord to the Mosaic authorship of the Pentateuch, and its credibility as history, is oft repeated and explicit. As specimens of this testimony, take the following—viz.:

"Do not think that I will accuse you to the Father : there is one that accuseth you, even *Moses, in whom ye trust.* For had ye believed Moses, ye would have believed me : for he wrote of me. But if ye believe not *his writings*, how shall ye believe my words ?" (John 5 : 45–47.)

"They said therefore unto Him, What sign showest Thou then, that we may see, and believe Thee ? what dost Thou work ? Our fathers did eat manna in the desert ; as it is written, He gave them bread from heaven to eat. Then Jesus said unto them, Verily, verily, I say unto you, *Moses gave you not that bread* from heaven ; but my Father giveth you the true bread from heaven." (John 6 : 30, 32.)

"Did not *Moses give you the law*, and yet none of you keepeth the law ? Why go ye about to kill me ? The people answered and said, Thou hast a devil : who goeth about to kill Thee ? Jesus answered and said unto them,

I have done one good work, and ye all marvel. Moses therefore gave unto you circumcision (not because it is of Moses, but of the fathers) ; and ye on the Sabbath day circumcise a man. If a man on the Sabbath day receive circumcision, that *the law of Moses* should not be broken ; are ye angry at me, because I have made a man every whit whole on the Sabbath day ?" (John 7 : 19–23.)

When our Lord had healed a leper He "said unto him, See thou tell no man ; but go thy way, show thyself to the priest, and offer *the gift that Moses commanded*, for a testimony unto them." (Matt. 8 : 4.) For the law referred to see Lev. 13 and 16.

"Now that the dead are raised, even *Moses showed* at the bush, when he called the Lord the God of Abraham, and the God of Isaac, and the God of Jacob. For He is not a God of the dead, but of the living." (Luke 20 : 37, 38.)

To His two sorrowing disciples at Emmaus our Lord said : "O fools, and slow of heart to believe all that the prophets have spoken : ought not Christ to have suffered these things, and to enter into His glory ? And *beginning at Moses* and all the prophets, He expounded unto them in all the Scriptures the things concerning Himself." (Luke 24 : 25–27.)

"And He said unto them" (His apostles), "These are the words which I spake unto you, while I was yet with you, that all things must be fulfilled, which were written in *the law of Moses*, and in the prophets, and in the psalms, concerning me." (Luke 24 : 44.)

Such is the explicit testimony of prophets and apostles and of our Lord Himself, to the Mosaic authorship of the Pentateuch and to its credibility, besides passages almost innumerable to be found throughout the Old and

New Testaments, in which, by fair implication, its authenticity and credibility are taken for granted. The evidence of this kind for Cæsar's authorship of "The Gallic Wars," and the credibility of that book, is not a tithe of that there is for Moses' authorship of "the Law," and its truth as history.

§ 60. *Prophets and Apostles Inspired; our Lord Divine.*

Thus far we have considered the testimony of prophets and apostles, and of our Lord Himself, as the testimony of ordinary men. But in forming a judgment respecting questions of the kind before us, in the case of other books, we always take into account the character and probable means of information of the witnesses. It is a dictate of common-sense that witnesses should be weighed as well as counted. Prophets and apostles claim to have written under inspiration of God; and our Lord claims to be truly and properly divine, to be God as well as man; and these facts must be taken into account if we would deal with the Pentateuch "just as we would deal with any other ancient book."

What do we mean by "inspiration of God"? Let us see if we can get from the Scriptures themselves a satisfactory definition of the term; and this is the more necessary, because many writers, especially the advocates of the higher criticism, have juggled with the term, until in their hands it has come to mean anything or nothing, as best suits their purpose.

The expression is used in 2 Tim. 3 : 6 : "All Scripture is given by *inspiration of God*," and its meaning is determined by such passages as the following—viz. : "God, who at sundry times and in divers manners spake in time past unto the fathers by the prophets, hath in these

last days spoken unto us by His Son." (Heb. 1 : 1, 2.) "When ye received the word of God which ye heard of us, ye received it not as the word of men, but, as it is in truth, the word of God." (1 Thess. 2 : 13.) "For the prophecy came not in old time by the will of man : but holy men of God spake as they were moved by the Holy Ghost." (2 Pet. 1 : 21.) "Now we have received, not the spirit of the world, but the spirit which is of God ; that we might know the things that are freely given us of God. Which things also we speak, not in the words which man's wisdom teacheth, but which the Holy Ghost teacheth ; comparing spiritual things with spiritual" (or, as Dr. Charles Hodge translates the last clause : "joining spiritual things to spiritual words.") (1 Cor. 2 : 12, 13.)

With any fair interpretation, these passages cannot be made to teach an inspiration less than : (1) That in the Scriptures we have an errorless record of truth—a record worthy to bear the name of the "Word of God ;" and (2) that an errorless record of truth has been made under the direct guidance and influence of God, the Holy Ghost.

In this inspiration God the Spirit did not interfere with the free and natural operation of the writer's own mind, did not obliterate his characteristic peculiarities of thought and diction. There is as marked a difference in style between the historic book of Genesis and the poetic book of Isaiah as between the writings of Thucydides and those of Homer. And this is in perfect accord with what experience teaches us of the operations of this same Holy Spirit upon the human spirit in regeneration and sanctification. Peter and John had characteristic peculiarities of spirit as well as of body before their regeneration ; they retained those peculiarities as long as

they lived on earth, and I doubt not they will retain them evermore : that in heaven, after the resurrection of the body has made the work of redemption complete, Peter will be Peter still, and John will be John.

Inspiration did not supersede the use of such means of information as, in the providence of God, were within the writer's reach. Thus Luke writes : "Forasmuch as many have taken in hand to set forth in order a declaration of those things which are most surely believed among us, even as they delivered them unto us, which from the beginning were eye-witnesses, and ministers of the word ; it seemed good to me also, *having had perfect understanding of all things from the very first*, to write unto thee in order, most excellent Theophilus, that thou mightest know the certainty of those things, wherein thou hast been instructed." (Luke 1 : 1–4.) It may be that Moses, in writing the book of Genesis, made use of traditions current among his people, possibly of historic documents which had come down to him from former generations. But this much is fairly implied in his writings, being a part of the Word of God, that when he did make use of such information he was guided by God the Spirit in the selection of the material used, separating between the appropriate and inappropriate the true and the false. Nothing less than this could make his writings worthy the title of "The Word of God."

There are two questions which have furnished subject for no little discussion in considering the matter under examination—viz.: (1) Is the inspiration of Scripture *plenary?—i. e.*, full, such as to make it an errorless record on all points on which it speaks, and not in matters of doctrine and the essentials of the Christian faith alone? To this question I answer, Yes ; it is plenary. The original autograph of the sacred writings was an

errorless record, though errors may have, and as a matter of fact unquestionably have, crept in in the process of transmission from the writer's day to ours. (2) Is inspiration *verbal?* To this I answer, Not in the sense which would make the writer a mere amanuensis, for then would uniformity in style of thought and expression characterize the Scriptures throughout, from Genesis to Revelations; but it is verbal in such a sense as is implied in Paul's words: "which things also we speak, not in the words which man's wisdom teacheth, but which the Holy Ghost teacheth; joining spiritual things to spiritual words" (1 Cor. 2 : 13); and in our Lord's argument for the resurrection: "But as touching the resurrection of the dead, have ye not read that which was spoken unto you by God, saying, I am the God of Abraham, and the God of Isaac, and the God of Jacob? God is not the God of the dead, but of the living." (Matt. 22 : 31, 32.)

Such is the doctrine of inspiration as plainly taught in Scripture. Prophets and apostles claim to have written under the influence of this inspiration—the inspiration of God the Spirit. Our Lord claimed to be the Son of God in such a sense that He could say: "He that hath seen me hath seen the Father." (John 14 : 9.) "I and my Father are one." (John 10 : 30.) And His whole life and teaching abundantly confirmed this claim. Taking into account now, as we would "in the case of any other ancient book," the character of the witness, do I go too far when I say that to the Christian the Mosaic authorship of the Pentateuch and its truth as history are established as fully and firmly as it is possible for testimony to establish such claims; that it comes to us sealed with the double seal of God the Spirit and God the Son?

The Pentateuch bears internal marks of having been

written by Moses and of being true history. To this proposition I will now ask the reader's attention.

§ 61. *The Literary Style of the Pentateuch.*

It is largely on the ground of its literary style that the higher critics reject the Mosaic authorship of the Pentateuch, Professor Robertson Smith contending that in differences of style characteristic of different portions of it we have evidence of the work of at least four different authors in the book usually ascribed to Moses.

The argument on this ground, inasmuch as it is made up largely of peculiarities of expression in the original Hebrew of the Pentateuch, cannot be intelligibly presented in a popular form—certainly not in a form which will place it within the reach of even the advanced classes in our Sabbath-schools for whose use Dr. Toy has written his "History of the Religion of Israel." For this reason it is, I presume, that Dr. Toy, in his book, gives us the conclusions to which his criticism has led him, and says little or nothing of the reasons therefor. For the same reason, instead of attempting to present the literary arguments of the higher critics, I will ask your attention to what Professor F. L. Patton, of Princeton, an able scholar, and one of the first logicians of our day and country, has written on the subject. In an article published in the *Presbyterian Review* for April, 1883, he writes:

"English readers are not unfamiliar with the precarious nature of arguments based on style. Some of us have not forgotten the discussion of the question whether Bacon wrote Shakespeare. Stanley Leathes, himself a Hebraist, makes admirable use of a controversy carried on in the columns of the London *Times* respecting the authorship of a poem, and says: 'If, some two hundred

years after Milton's death, a number of educated Englishmen, versed in the many known writings of Milton, cannot agree about the authorship of a certain poem upon internal evidence, are we to believe that great weight should be attached to the assertion of a German critic who, some twenty-five centuries after the death of a Hebrew prophet, declares positively, upon internal evidence alone (for here there is no handwriting to help us), that a series of poems are not by him?' He is here speaking of what he calls 'the imaginary figment of a second Isaiah,' but the illustration suits the question in hand equally well.

"It would have been better for the theory of a fourfold narrative, so far as we are concerned, had Professor Smith contented himself with the *argumentum ad ignorantiam*, and told us that this is a matter which no one but a critic can understand; for in attempting to make us see the argument upon which criticism relies, he has confirmed our scepticism. We may assume that in illustrating differences of style between Exodus, Leviticus, and Deuteronomy he would not choose the passages in which it is least apparent; indeed, when we read the parallel passages in which he holds up this difference of style to the gaze of eyes that are kindly supposed to be unfamiliar with the Hebrew text, we take it for granted that we have before us a crucial instance. As such we have studied it according to our light; and our conclusion is, that, judging by the differences apparent in these passages, the critics have most ungrudgingly obeyed the law of parsimony when they assigned only four authors to the Pentateuch. Why not forty? For we have no hesitation in saying that by the same rule which gives four authors and a redactor to the Pentateuch we will undertake to show that four authors and as many redac-

tors were concerned in each of the articles written by Professor Smith and Dr. Briggs.

"But let us listen to what specialists have to say upon this subject. Professor Smith admits that 'literary criticism, though a good and delicate tool, is subject to special limitations in the case of Hebrew,' and that 'when carried beyond a certain point it arouses suspicion.' Professor Curtis tells us there is 'need of great caution in accepting the analysis of the critics.' Dr. Green regards the recent right-about-face as to the order of the Elohist and Jehovist as 'a fresh demonstration of the precarious and inconclusive nature of the entire process of argument.' Stanley Leathes pronounces 'unsatisfactory and unsound the results of criticism which arise from the application of the Elohistic and Jehovistic theory to the composition of the Pentateuch.' 'Imaginary and unreasonably arbitrary,' says Dr. McCaul, speaking of the Elohistic question; and Dr. Harold Brown puts his estimate upon the theory that denies the Mosaic authorship of Genesis when he says: 'The romance of modern criticism is as remarkable as its perverse ingenuity.'"

§ 62. *Incidental Confirmation.*

In the case of historical writing, unexpected confirmations of their incidental statements, by other writings of admitted authority, properly have great weight in determining such questions as that before us. As instances of this sort of confirmation of the authenticity and credibility of the Pentateuch, take the following—viz.:

1. In Gen. 41 : 14 we read: "Then Pharaoh sent and called Joseph, and they brought him hastily out of the dungeon: and *he shaved himself*, and changed his raiment, and came in unto Pharaoh." On this Hengsten-

berg remarks: "Even the most prejudiced mind in this incidental notice recognizes a purely Egyptian custom. Herodotus mentions it among the distinguishing peculiarities of the Egyptians, that they commonly were shaved, but in mourning they allowed the beard to grow. The sculptures also agree with this representation." "So particular," says Wilkinson, "were they on this point, that to have neglected it was a subject of reproach and ridicule; and whenever they intended to convey the idea of a man of low condition or a slovenly person, the artist represented him with a beard." "Although foreigners," says the same author, "who were brought to Egypt as slaves had beards on their arrival in the country, we find that as soon as they were employed in the service of this civilized people they were obliged to conform to the cleanly habits of their masters: their beards and head were shaved, and they adopted a close cap." ("Egypt and the Books of Moses.")

2. In Gen. 43 : 31–33 we read: "And he" (Joseph) "washed his face, and went out, and refrained himself, and said, Set on bread. And they set on for him by himself, and for them by themselves, and for the Egyptians, which did eat with them, by themselves: because the Egyptians might not eat bread with the Hebrews; for that is an abomination unto the Egyptians. And they *sat* before him." On this account Hengstenberg remarks: "Herodotus tells us that the Egyptians abstained from all familiar intercourse with foreigners, since these were unclean to them, especially because they slew and ate the animals which were sacred among the Egyptians. Therefore (since the Egyptians honor much the cow) no Egyptian man or woman will kiss a Greek upon the mouth. They also use no knife or fork or kettle of a Greek, and will not eat the flesh of any clean beast if it

has been cut up with a Greek knife. The circumstance that Joseph eats separately from the other Egyptians is strictly in accordance with the great difference of rank and the spirit of caste which prevailed among the Egyptians."

"It appears from v. 33 that the brothers of Joseph *sat* before him at the table, while, according to patriarchal practice, they were accustomed to recline. It appears from the sculptures that the Egyptians also were in the habit of sitting at table, although they had couches. Sofas were used for sleeping. In a painting in Rosellini each one of the guests sits upon a stool, which, in accordance with the custom, took the place of the couch." ("Egypt and the Books of Moses," pp. 37, 38.)

3. In his "Origin of Nations" Canon Rawlinson writes: "What, then, has ethnographical science, following a strictly inductive method, and wholly freed from all shackles of authority, concluded on the matter before us? A single passage from the greatest of modern ethnologists will suffice to show."

"There was a time," says Professor Max Müller, "when the ancestors of the Celts, the Germans, the Sclaves, the Greeks and Italians, the Persians and the Hindoos were living together beneath the same roof, separated from the Semitic and Turanian races." And again: "There is not an English jury nowadays which, after examining the hoary documents of language, would reject the claim of a common descent and a legitimate relationship between Hindoo, Greek, and Teuton." Ethnological science, we see, regards it as morally certain, as proved beyond all reasonable doubt, that the chief races of modern Europe, the Celts, the Germans, the Græco-Italians, and the Sclaves, had a common origin with the principal race of Western Asia, the Indo-Per-

sian. Now this result of advanced modern inductive science—a result which it is one of the proudest boasts of the nineteenth century to have arrived at—is almost exactly that which Moses, writing fifteen hundred years before the Christian era, laid down dogmatically as a simple historical fact in Gen. 10 : 2." ("Origin of Nations," p. 176.)

4. A very curious "undesigned confirmation" of the history contained in Genesis has lately been brought to light. In his study of the papyri and inscriptions in the tombs which especially concern the daily life and habits of the Egyptians, Brugsch-Bey, one of the best informed among the Egyptologists of the present day, has made out what may be called an Egyptian "price-current" of the days of Joseph. According to this, a slave sold for $9.73, an ox for 31 cents, a goat for $7\frac{7}{10}$ cents, a pair of fowls for 1 cent, a razor for $3\frac{1}{2}$ cents. (Osborn's "Ancient Egypt," p. 82.) If we turn now to Gen. 37 : 28 we read : "And" (they) "sold Joseph to the Ishmaelites for twenty pieces of silver : and they brought Joseph into Egypt." The piece of silver was doubtless the silver shekel, worth, at that time, according to best authority, a little less than fifty cents of our money, the twenty pieces of silver corresponding almost exactly to the $9.73 of the old Egyptian "price-current."

§ 63. *The Character of the Communications.*

The character of the communications and the style of thought and reasoning of a book often furnish important evidence respecting its age and authorship.

The Pentateuch contains a communication, commonly spoken of as the "moral law" or "Ten Commandments," which the author claims to have received directly from God ; first, as spoken in audible words from the

top of Sinai, and afterward on "two tables of stone, written with the finger of God." According to this claim, God is the author of this law in a very peculiar sense. Does the nature and style of this law correspond to such a claim?

In a little tract published by the American Tract Society many years ago, an eminent lawyer gives the following brief summary of the moral law, with his own remarks thereon: "I have been looking," writes he, "into the nature of that law. I have been trying to see whether I can add anything to it or take anything from it, so as to make it better. I cannot. It is perfect.

"The first commandment directs us to make the Creator the object of our supreme love and reverence. This is right. If He be our Creator, Preserver, and Supreme Benefactor, we ought to treat Him, and none other, as such.

"The second forbids idolatry. That certainly is right.

"The third forbids profaneness.

"The fourth finds a time for religious worship. If there be a God, He ought surely to be worshipped. It is suitable that there should be an outward homage, significant of our inward regard. If God is to be worshipped, it is proper that some time should be set apart for that purpose, when all may worship Him harmoniously and without interruption. One day in seven is certainly not too much, and I do not know that it is too little.

"The fifth defines the peculiar duties arising from the family relations.

"Injuries to our neighbor are then classified by the moral law. They are divided into offences against life, chastity, property, and character. And, applying a legal idea, I notice that the greatest offence in each class is

expressly forbidden. Thus, the greatest injury to life is murder; to chastity, adultery; to property, theft; to character, perjury. Now, the greater offence must include the less of the same kind. Murder must include every injury to life; adultery, every injury to purity, and so of the rest. And the moral code is closed and perfected by a command forbidding every improper desire in regard to our neighbor.

"Where did Moses get that law? I have read history. The Egyptian and adjacent nations were idolators; so were the Greeks and Romans; and the wisest and best Greeks or Romans never gave a code of morals like this. Where did Moses get this law, which surpasses the wisdom and philosophy of the most enlightened age? He lived at a period comparatively barbarous, but he has given a law in which the learning and sagacity of all subsequent time can detect no flaw. Where did he get it? He could not have soared so high above his age as to have devised it himself. *It must have come from heaven.*" And this is just what is affirmed respecting it in the Pentateuch.

As Rousseau, after a careful study of the character of Christ Jesus as set forth in the Gospel, said, "It is more inconceivable that a number of men should agree to write such a history than that one should furnish the subject of it," so we may say respecting the Ten Commandments, It is more inconceivable that any man of the age and people among whom they first appeared should have written them than that they were "written on two tables of stone, by the finger of God," as is affirmed in the Pentateuch.

In our examination of the Mosaic authorship of the Pentateuch and its credibility, we have now applied the tests by which similar questions respecting other ancient

books—"Cæsar's Gallic Wars," for example—are determined; and, in view of all the facts brought out, I see not how any thoughtful man can avoid the conclusion that the Pentateuch was written by Moses, that it is true history, and, as it claims, written under inspiration of God.

§ 64. *The Divine Element in the Authorship of the Pentateuch Ignored by the Higher Critics.*

Professor Robertson Smith writes: "We must not be afraid of the human side of Scripture. *It is from that side alone that scholarship can get at any biblical question.*" And again: "The first condition of a sound understanding of Scripture is to give full recognition to the human side, to master the whole situation and character and feelings of each human interlocutor who has a part in the drama of revelation. *Nay, the whole business of scholarly exegesis lies within this human side.*" ("The Old Testament in the Jewish Church," Lecture I.) There is a sense in which these declarations of Professor Robertson Smith may be true; but in the sense which he puts upon them in his subsequent critical examination of the Scriptures—*i.e.*, that we must deal with them as if they were simply a human production, like any other ancient book—they are not true.

The Scriptures claim both a divine and a human agency in their production—"Holy men of God spake" —there is the human agency; "as they were moved by the Holy Ghost" (1 Pet. 21 : 21)—there is the divine agency. There is a true sense in which the Bible is a God-made book, and we cannot deal fairly with it, judge of it just as we would judge of any other ancient book, if we ignore this fact; and a disregard of it must inevitably lead us into error.

In our day the art of making artificial, man-made flowers has been carried to great perfection, especially in the city of Paris—to such perfection, that it is sometimes difficult to distinguish, at a little distance, between them and the natural, God-made flowers grown in our gardens. If we ignore this distinction, and treat all flowers as man-made, it will lead to the greatest absurdities. For example, take to the best artificial rose-maker in Paris a glass of water and a handful of charcoal, and ask her to make you a rose of them; will she be much to blame if she thinks you crazy? And yet that is the very material out of which the most beautiful God-made rose has been constructed. Or suppose I take a natural rose, one that has grown in my garden, and attempt to answer the question, Where was it produced? It is very perfect in its form and structure, much more so than the roses made in New York or Philadelphia; it must have been made in Paris. And this is the only rational conclusion to which I can come if all roses are artificial, man-made.

Not one whit more reasonable than this is the conclusion of the higher critics from Gen. 36 : 31 : "And these are the kings that reigned in the land of Edom, before there reigned any king over the children of Israel," that this portion of Genesis, at the least, must have been written after the days of Saul, the first king of Israel. The inference is reasonable if the book has no divine element in its authorship; but if it has such an element, if in a true sense of the expression the book is God-made, then this passage must be regarded as nothing more than an instance of predictive prophecy, and is worthy of no more attention in fixing the date of the book than Gen. 35 : 11—"And God said unto him, I am God Almighty : be fruitful and multiply ; a nation

and a company of nations shall be of thee, and *kings* shall come out of thy loins."

§ 65. *The Truth of the Hypothesis of Evolution Assumed by the Higher Critics.*

The higher critics utterly ignore the divine agency in man's progress in civilization and religion, and assume that all such progress has been made through the agency of human reason alone, and by a regular process of development or evolution. Dr. Toy writes: "The facts that have come to our knowledge make it probable that all the ancient or national religions originated in the same way, and grew according to the same laws. The differences between them are the differences between the peoples to whom they belong. Up to a certain point in their development they are all alike, and then they begin to show their local peculiarities. Of the earliest stage of Israel's religion, the fetishistic, we know almost nothing; when we find them in Canaan they are polytheist, like their neighbors—that is, they have separated the Deity from the objects of nature, and regard these last as symbols of the Godhead. Thus much of their religious career belongs to the general history of ancient religions." ("History of the Religion of Israel," p. 148.)

In common with the advocates of the theory of the evolution of man from the brute, Dr. Toy here assumes that man, as man, began his course upon the earth as the most ignorant, debased, and superstitious savage; and gradually, by his own efforts continued through ages, worked out a civilization and a religion for himself; that God, having created man—if, indeed, He did create him, a pitiable troglodyte, like the Digger Indians of the West—left him to work out his destiny as best he could;

and anything inconsistent with this monstrous hypothesis he treats as irrational and unworthy of credit.

In irreconcilable opposition to all such assumptions as this, the Bible tells us that "God said, Let us make man in our own image, after our likeness: and let them have dominion over the fish of the sea, and over the fowl of the air, and over the cattle, and over all the earth, and over every creeping thing that creepeth upon the earth. So God created man in His own image, in the image of God created created He him; male and female created He them." (Gen. 1 : 26, 27.) "Thou madest him" (man) "a little lower than the angels, and hast crowned him with glory and honor. Thou madest him to have dominion over the work of thy hands." (Ps. 8 : 5, 6.) Civilized man "has dominion over the work of God's hands" to-day—over the steam which drives our machinery and the electricity which carries our messages around the earth, not because he has grown into a giant mightier than they, but because he has learned the fixed laws which govern these agents, and through the operation of these laws compels them to do his bidding. Of any other kind of dominion than this we know nothing; and so we conclude that when God "set man over the work of His hands," He must have imparted to him a knowledge of creation very far in advance of that possessed by the Digger Indians.

In consistency with this idea of man's condition at the beginning, we read, in the third chapter of Genesis, of the division of labor: "Abel was a keeper of sheep, but Cain was a tiller of the ground;" of the building of cities: "And he builded a city, and called the city after the name of his son Enoch;" of mechanics and metallurgists: "Tubal Cain was an instructor of every artificer in brass and iron;" and of music and musical instruments:

"Jubal was the father of all such as handle the harp and the organ"—all of them marks of an advanced civilization. We read also of Abel and Cain as engaging in the public worship of God: the one, by bloody sacrifice, which he "offered in faith" (Heb. 11 : 4), the representative of the religion of the Gospel; the other, by his offering of the fruit of the ground, the representative of "natural religion"—the two great phases of religious thought among the civilized peoples of to-day. From this condition of advanced civilization the Scriptures teach us that man sank from generation to generation, through the degrading influence of sin, until Christianity, in its form of world-wide activity, commenced its reclaiming work. On many tribes and peoples Christianity has not yet been brought to bear, and they are the troglodytes and cannibals of to-day in "the paleolithic or old Stone Age" of their existence. Among others it has long been at work—*e. g.*, the peoples of Great Britain and America, and they lead the van of civilization, and dominate the world.

With this scriptural idea of the course of civilization, the facts of authentic history and the monuments of antiquity all agree. The oldest civilization of which we can learn anything with certainty outside the records of Scripture is the Egyptian; and among the monuments of this Egyptian civilization the grandest are confessedly the oldest; and the oldest form of Egypt's religion is the purest. So it is with the Assyrian and Indian civilizations, the written and monumental records of which have lately been disentombed. On our western continent the civilization of the empire of the Incas, in South America, was far in advance of that of their descendants in our time. The mouldering temples of Central America and the rock-cities of New Mexico tell the

same story. Standing on the height of our modern civilization, and looking away into the long-passed, the farthest off of the objects distinctly seen are the pyramids and temples of Egypt; and then the palaces and great cities of the valley of the Euphrates; and then the rock-hewn temples and old pagodas of India and China—all telling, not of savage man, working up through sheer force of intellect from savagery to civilization, but of civilized man sinking lower and lower from generation to generation; all utterly inconsistent with the assumption of the higher critics; all confirming the simple story of the Bible.

§ 66. *Conclusion.*

Returning now to the question with which we started, and which was then remitted to a future stage of the discussion—What is the "higher criticism"? I answer, It is a system of "destructive criticism," false in some of the most important and fundamental of its assumptions, partial and unfair in its application of sound criteria of judgment to questions concerning the authorship and credibility of the several parts of the Old Testament Scriptures, especially the Pentateuch, and unreliable in its methods, even where those methods are least open to objection.

Carried out to its legitimate results, as it is in Dr. Toy's "History of the Religion of Israel":

1. *It takes away from us the Bible as "the Word of God,"* though Dr. Toy would doubtless repudiate such a conclusion. But how can a plain man look upon a book as "The Word of God," which is but a mass of fables and falsehoods?—*e.g.*, a book which holds up Abraham as "the father of the faithful" and "the friend of God," when, in fact, he was but a savage fetich-worshipper; and this he must have been if Israel

did not emerge from fetichism until their settlement in Canaan; a book which tells us of Moses as the man by whom "the law was given" at Sinai, when, in fact, it is doubtful if Moses was ever at Sinai, and the law was not written until a thousand years after Moses died, and then was written out by some old priest or prophet, and palmed upon the people under the false pretence that it was Moses' work, in order to give it authority in Israel.

2. *It takes from us Christianity as a supernatural religion revealed by God*, though Dr. Toy would probably repudiate this conclusion also. But how can it be avoided if the religion of Israel—substantially the Christianity of Great Britain and America to-day—like Buddhism and Confucianism, is but one of the "national religions, which all originated in the same way, and all grew according to the same laws"?

"Let no man deceive you with vain words." (Eph. 5 : 6.) It is the Gospel of Christ, our holy religion, which is in controversy. The "higher criticism," in its practical development in our day, is but an attack "within the walls," just as the atheism of Hegel and Ingersoll is an attack from without. We need not, we do not, fear the result. We have the Master's assurance that His Church, with all that is precious in the Gospel which it enshrines, "is built upon a rock, and the gates of hell shall not prevail against it."

VI.

PROVIDENCE AND PRAYER.

§ 67. *A Statement of Professor Huxley.*

"The history of every science," writes Professor Huxley, "is but the history of the elimination of the notion of creative or other interference with the natural order of the phenomena which are the subject-matter of that science. When astronomy was young 'the morning stars sang together for joy,' and all the planets were guided in their courses by celestial hands. Now the harmony of the stars has resolved itself into gravitation according to the inverse squares of the distances, and the orbits of the planets are deducible from the laws of forces which allow a schoolboy's stone to break a window. The lightning was the angel of the Lord, but it has pleased Providence in these modern times that science should make it the humble messenger of man, and we know that every flash which shimmers above the horizon on a summer evening is determined by ascertainable conditions, and that its direction and brightness might, if our knowledge of these were great enough, have been calculated.

"The solvency of great mercantile companies rests on the validity of the laws which have been ascertained to govern the seeming irregularity of that human life which the moralist bewails as the most uncertain of things; plague, pestilence, and famine are admitted by all but fools to be the natural results of causes, for the most

part, fully within human control, and not the unavoidable tortures inflicted by wrathful Omnipotence upon His helpless handiwork.

"Harmonious order governing eternally continuous progress, the web and woof of matter and force intertwining by slow degrees, without a broken thread, that veil which lies between us and the Infinite, that universe which alone we know and can know, such is the picture which science draws of the world; and in proportion as any part of that picture is in unison with the rest, so may we feel sure that it is rightly painted." ("Lay Sermons," pp. 282, 283.)

In the above-quoted extract from Huxley's "Lay Sermons" we have a statement (1) of the practical effect of the progress of science upon man's conceptions of nature; and (2) a picture of our cosmos—*i. e.*, "the world as a beautiful system," such as atheistic materialism would fain have us believe them to be, from the pen of one competent, if any man is, to do his subjects justice.

§ 68. *Effect of Modern Science on Man's Conception of Nature.*

It is undoubtedly true that many phenomena which "in the youth and imperfection of science" men were unable to explain—*i.e.*, to trace to the operation of some general law, and which, on that account, they ascribed to the immediate interposition of a being above matter, and ruling over it—the being whose existence Huxley acknowledges under the titles of "Providence," "the Infinite," in the progress of science have been explained. This must, of necessity, be the case; for the progress of science consists essentially in our becoming more and more fully acquainted with the laws and properties of matter. Yet is it true that in our day there is a vastly

greater number of phenomena which thoughtful men, familiar with all that science can teach them respecting the nature and laws of matter, feel constrained to ascribe to the agency of a supermaterial power, call it Providence, or the Infinite, or what you will, than there was "in the youth and imperfection of science."

In entertaining this belief, there is no "interference with the *natural order* of phenomena" necessarily implied unless we give to the term nature a narrow, unscientific definition, which will exclude the mind of man, and, indeed, the lesser minds of all living things, as well as God Himself, from nature. Our cosmos is a complicated machine, but, at the same time, it is something more than a mere machine. Man is "wonderfully made," but at the same time he is something more than "the cunningest of nature's clocks." Nothing is more certain than that there are forces at work around us other than the forces inherent in matter, and forces often mightier than they.

§ 69. *Huxley's Picture of our Cosmos Incomplete.*

It is undoubtedly true that law reigns throughout the universe; that "matter and force," in so far as the forces inherent in matter are concerned, are subject to law, and hence that the phenomena resulting therefrom, where we have learned the law, may be made the subject of calculation. This is true in cases such as the operation of gravity on the planetary bodies, where we have to deal with a definite force and a definite body; and also in cases such as the average length of human life, where we have to deal with a number of results, each by itself, in so far as we can ascertain, most uncertain. As Professor Huxley says, "The solvency of great mercantile companies"—our life-insurance organi-

zations—" rest upon the validity of the laws which have been ascertained to govern the seeming irregularities of that human life which the moralist bewails as the most uncertain of things." In both instances law governs, but laws very different in their kind ; the one, a definite law of force ; the other, the law of averages, or, as it is more commonly called, the law of probabilities.

" The reign of law " throughout our cosmos is widespread—universal if you please—but it is very far from justifying the belief that it is a mere machine, or the conclusions of fatalism. The picture which true science, taking account of all the elements in the complex problem under examination, gives us is not the picture described in Huxley's words—" Harmonious order governing eternally continuous progress, the web and woof of matter and force, interweaving by slow degrees, without a broken thread, that veil which lies between us and the Infinite, that universe which alone we know and can know." It is in a very different sense from that in which we use the term *machine* when speaking of man's handiwork, we must use it when we apply it to the world in which we live and of which we form a part.

A true picture of our world is made up of hills and valleys, rivers and deserts, giant oaks and beautiful lilies, and living animals in great variety of form and size ; but along with these, and just as real as they, are everywhere mingled cities and cultivated fields, palaces and hovels, ships and railroad trains, statues and paintings, and all the vast variety of works of art which minister to man's tastes and necessities. The description which science gives of our world must take account of forces other than those imminent in lifeless matter, such as gravitation and heat—forces which have originated with intelligent living beings—*e. g.*, the forces which have

transformed the oak into a ship or railroad car, and then direct its movements with reference to the accomplishment of a certain definite purpose. Living animals belong to the picture just as truly as lifeless matter. The free will-power of intelligent man is just as real a force in nature as gravitation and heat, and in the actual course of events an equally effective force.

Let us examine a particular instance of the operation of this free will-power of intelligent man, that we may see how it works without any conflict with that "reign of law" which is maintained in the material world. A merchant wishes to transport a cargo of cotton from this country to Great Britain, making use of the wind as a motive power in crossing the ocean. Did the wind blow steadily in the direction in which his vessel must sail, the problem would be a very simple one. All he would need to do would be to raise a sail and commit his vessel to the conduct of the winds. But, in fact, experience tells him that a wind blowing steadily in the direction in which he wishes his vessel to sail, and for the length of time required by his contemplated voyage, is not to be expected. Did he simply raise a sail, variable as the winds are, his ship would be as likely to be driven to South America or wrecked on some desert island as to reach Great Britain. What shall he do? He has learned the law of "the composition and resolution of forces," and that this law governs the operation of the wind-force he desires to make use of. He therefore trims his sails in obedience to this law, and so the winds from almost every quarter are made to propel his vessel in the one direction which he has selected. In substantially the same way it is that all the forces inherent in matter are made subject to man's control. By selecting his instruments and shaping his course in conformity to the laws

which govern the operation of these forces, free, intelligent man compels them "to do his bidding." Propose to the ignorant savage to rend the rocky mountain cliff to pieces or to send a message across the Atlantic in a few seconds of time, and he might well ask: "Am I God, that I should do this thing?" But the skilful engineer, acquainted with the explosive power of dynamite and the swift motion of electricity, and knowing the laws which govern the operation of these wonderful agents, can so arrange matters that the desired result shall be accomplished with very little expenditure of force on his part. It is the glory of modern science that it has subjected material forces to so great an extent to man's will—in Huxley's own words, that it has made "the lightning the humble servant of man." Is it not, then, utterly unscientific to exclude man from our idea of nature, and strange that any thoughtful scientist should consent to do so?

§ 70. *The True Conception of Nature.*

In his "Reign of Law" the Duke of Argyll writes: "Does man, then, not belong to nature? Is he above it, or merely separated from it, or in violation of it? Is he supernatural? If so, has he any difficulty in believing in himself? Of course not. Self-consciousness is the one truth, in the light of which all other truths are known, *Cogito, ergo sum*, or *Volo, ergo sum*—this is the one conclusion which we cannot doubt unless Reason disbelieves herself. Why, then, are the faculties of the human mind and body not habitually included among the "laws of nature"? Because a fallacy is getting hold upon us, from a want of definition, in the use of terms. *Nature* is being used in the *sense of physical nature*. It is conceived as containing nothing beyond the proper-

ties of matter. Thus, the whole mental world in which we ourselves live and move and have our being is excluded from it. But these selves of ours do belong to nature. At all events, if we are ever to understand the difficulties in the way of believing in the supernatural, we must first keep clearly in view what we intend to understand as included in the natural. Let us never forget, then, that the agency of man is, of all others, the most natural—the one with which we are most familiar—the only one, in fact, we can be said even in any measure to understand." ("Reign of Law," p. 7.)

The city of London, with its adjacent parks and cultivated fields, is to-day as truly a part of our cosmos as the trackless forest and wide meadow which once occupied the site of the modern city; and all that makes up the difference between the two—the magnificent cathedrals, the splendid palaces, the comfortable homes, the busy machine-shops, the thronged mercantile establishments, the capacious warehouses, the carefully constructed bridges and docks, the vessels of every class, propelled by wind or steam, that move about upon the river, the loaded railroad trains that make their way swiftly over the land, the cultivated field, laden with its harvest of ripened grain, the garden blooming with flowers brought from distant lands—these, and all else that mark the advanced civilization of the London of to-day, are directly traceable to the agency of intelligent man, putting forth a free will-power, in harmony with the ascertained laws governing the operation of material forces, and so, subjecting them to his control, making them to do his pleasure. Now, if all this has been done in what we must consider a perfectly *natural* way—if we will give to the term *natural* its proper scientific sense —and without producing even a jar in the working of

this vast, law-governed machine of the material world, what possible objection can be urged to the belief in the operation in our cosmos of a free will-power mightier than that of man, if the phenomena which present themselves for our study call for such a belief? If the activities of man may not be excluded from a true conception of nature, why should the activities of a mighter than man—even of God—be excluded or studiously ignored?

Of the origin of matter no other rational account can be given than that with which the oldest of extant cosmogonies opens: "In the beginning God created the heaven and the earth." The extremest system of evolution postulates the existence of "star dust"—a vast mass of nebulous matter out of which our cosmos has been developed; and this, as to its ultimate molecules, possessed of a wonderful "potentiality" (*i. e.*, inherent power not actually exhibited, Imperial Dictionary). Leaving out of account all that portion of this potentiality which is the peculiar postulate of evolution, and taking account of such characteristics only of these molecules—atoms, as modern science regards them—as have been ascertained to exist—*e. g.*, their absolute indestructibility, the definite, unchangeable weight of each several kind of atoms, their peculiar chemical affinities, in consequence of which they combine with each other according to certain fixed laws, their mathematically exact forms or axes of polarity, causing them to crystallize with every angle true to measure, are we not fully justified in saying, with Sir John Herschel, that "atoms possess all the characteristics of manufactured articles"? And if manufactured articles, then a manufacturer; and this manufacturer not nature, in the sense of law-governed matter, for matter is made up of these very atoms; not man, for atoms existed long before man, the latest

added element of our cosmos, came into being, but God, the eternal, self-existent Author of all things. Here, then, at the very beginning we are confronted with the proof of the existence and working of a free will-power in many particulars similar to that of man, but far mighter than his.

If we pass now from the examination of atoms to that of the more complex structures of plants and animals which everywhere surround us, we will be more deeply impressed with the idea that they are all "manufactured articles;" and this, whether we regard them as the products of immediate creation or of an evolution which is but "a mode of creation." Study the structure and growth of a lily, for example. Note its changes from the shrivelled, dark-colored seed to the living plant in bloom, of which it has been truly said "that Solomon, in all his glory, was not arrayed like one of these;" and consider the fact that through the intervention of the simplest of mechanisms, in so far as we can see, this flower in all its perfection of form, its beauty of color, its inimitable markings, and its sweet perfume, has been made out of the rotting remains of some previously existing plant, with the addition of a little water and air—a work which after years of study man cannot understand, much less imitate, and again we find ourselves confronted with what we must consider the work of God—the eternal, self-existent Author of all things.

In the rudely chipped implements of the paleolithic age the archæologist discerns the handiwork of intelligent man, and hence infers the existence and activity of man at the time these implements were made; and no one questions the correctness of his inferences. How, then, can we look upon atoms, far more curiously constructed, or the more complex structures presented in plants and

animals—even the rudimentary organisms which Darwin starts with—and consistently question the proof they furnish of the existence and activity of an intelligent agent, mightier than man, when they were made?

§ 71. *Providence.*

When such a conclusion is reached, the question at once arises, If such was God's relation to our cosmos in the beginning, what is it to-day? Shall we say, God made the world, and impressed upon it certain laws, endowing matter with its properties, and rational beings with the power of free agency, and having done this, He leaves the world to the guidance of these general laws; that all things come to pass in virtue of the operation of causes which He created and set in motion at the beginning? "According to this view, God in nowise determines the effects of natural causes, nor controls the acts of free agents. The reason that one season is propitious, and the earth produces her fruits in abundance, and that another is the reverse; that one year pestilence sweeps over the land, and another year is exempt from such desolation; that of two ships sailing from the same port, the one is wrecked and the other has a prosperous voyage; that the Spanish Armada was dispersed by a storm, and Protestant England saved from Papal domination; that Cromwell and his companions were prevented from sailing for America, which decided the fate of religious liberty in Great Britain—that all such events are as they are must, according to this theory, be referred to chance or the blind operation of natural causes. God has nothing to do with them. He has abandoned the world to the government of physical laws, and the affairs of men to their own control." (Hodge's "Theology," vol. 1, p. 591.)

This hypothesis, while it has not been without advocates in ancient as well as modern times, has never been accepted by the vast majority of thoughtful men. A belief in the continued providential government of the world by God, its Creator, is common to all forms of religion which have obtained currency among men ; and is as pronounced in the inscriptions of the Tigro-Euphrates Valley—which antiquaries are now deciphering after a lapse of many centuries—as in the writings of Christian authors of to-day. Dr. Charles Hodge has said truly, this belief "is the intuitive conviction of all men, however inconsistent it may be with their philosophical theories or with their professions." Professor Huxley writes : "The lightning was the agent of the Lord, but it has pleased *Providence*, in these modern times, that science should make it the humble messenger of man." Now, whether we regard this recognition of Providence as governing the progress of science, as the expression of an intelligent and definite belief on the part of Professor Huxley himself, or as merely a form of expression which he found current among men, and adopted in order to make himself understood, it furnishes at once an illustration and a proof of the truth of Dr. Hodge's statement quoted above.

No one can study the records of the past and not be constrained to feel that there is an order in events—a philosophy of history. Of this Professor Huxley evidently gets a glimpse when he writes : "Harmonious order governing eternally continuous progress, the web and woof of matter and force interweaving by slow degrees, without a broken thread, that veil which lies between us and the Infinite." The "web and woof of matter interweaving continuous progress ;" aye, and is

there no Weaver? Shakespeare but gives expression to the common thought of man when he writes:

> "Let us own,
> Our indiscretion sometimes serves us well,
> When our deep plots do fail; and that should teach us,
> There's a divinity that shapes our ends,
> Rough-hew them how we will."

And one greater than Shakespeare teaches the doctrine of a Providence, at once general and particular, in His words: "Are not two sparrows sold for a farthing? and one of them shall not fall on the ground without your Father. But the very hairs of your head are all numbered." (Matt. 10 : 29, 30.)

§ 72. *Professor Tyndall's Prayer-Test.*

"Prayer and the answer of prayer are simply . . . the preferring of a request upon the one side and compliance with that request upon the other. Man applies, God complies. Man asks a favor, God bestows it. These are conceived to be the two terms of a real interchange that takes place between the parties—the two terms of a sequence, in fact, whereof the antecedent is a prayer lifted up from earth, and the consequent is the fulfilment of that prayer in virtue of a mandate from heaven." (Chalmers's Works, vol. 2, p. 321.)

In immediate connection with the doctrine of God's providence, the Scriptures teach the doctrine of effectual prayer, for which it lays a proper foundation. "The theory of the universe which underlies the Bible, which is everywhere assumed or asserted in the sacred volume, which accords with our moral and religious nature, and which, therefore, is the foundation of natural as well as of revealed religion, is that God created all things by the word of His power; that He endowed His creatures

with their properties or forces; that He is everywhere present in the universe, co-operating with and controlling the operation of second causes on a scale commensurate with His omnipresence and omnipotence, as we, in our measure, co-operate with and control them within the narrow range of our efficiency. According to this theory, it is not irrational that we should pray for rain or fair weather, for prosperous voyages or healthful seasons; or that we should feel gratitude for the innumerable blessings which we receive from this ever-present, ever-operating, and ever-watchful benefactor and Father. Any theory of the universe which makes religion or prayer irrational is self-evidently false, because it contradicts the nature, the consciousness, and the irrepressible convictions of men. As this control of God extends over the minds of men, it is no less rational that we should pray—as all men instinctively do pray—that He would influence our own hearts and the hearts of others for good, than that we should pray for health." (Hodge's "Theology," vol. 3, p. 698.)

In an article published in the *Contemporary Review* for July, 1872, Professor Tyndall, writing in the character of a physician, makes, in substance, the following proposition—viz.: "We will submit the matter to the test of calm experiment. Let the advocates of prayer and ourselves select two wards of a hospital, each of them full of sick persons, and agree upon the following conditions: Both wards shall receive the same medical attention, the same tender nursing, the same human palliatives of the complaints of the sufferers; but those in one of them shall have, in addition, the supposed benefit of prayer being offered for their recovery. Those in the other shall be left without that supposed benefit. If the former ward shall present a larger num-

ber of instances of restoration to health, or of more speedy or more complete restoration than the latter, something will have been done toward removing the objection that prayer is barren of results. At any rate, inducement will then exist to repeat the experiment. Every repetition, if accompanied by a similar result, will go further toward the removal of the objection. At length it will be removed entirely, for no doubt it will be ultimately discovered not merely that prayer is available, but how much it is available both generally and in particular cases." (Quoted from "The Boyle Lectures for 1873," pp. 113, 114.)

§ 73. *Tyndall's Test Practically Worthless.*

I cannot believe that Professor Tyndall, when he proposed to test the efficacy of prayer in healing diseases, used the word prayer in its low, heathen sense of the mere repetition of or form of words—an incantation, a charm. He must have understood it to be, at the least, an honest expression of the heart's desire of the petitioner. If he did not, his proposition is an evasion and not a test of the truth of the Christian's faith. No Christian believes in the efficacy of an incantation. Taking this to be his meaning, I remark, his test is worthless, and this for two reasons—viz.:

1. The men in the ward of the hospital for whom no prayer is to be made, whose recovery is in no way to be influenced by prayer, may pray for themselves; and should they find themselves gradually growing worse, some of them, undoubtedly, will do so. In times of distress and danger most men instinctively turn to prayer. The Scriptures give us the story of a threatened shipwreck in the words: "But the Lord sent out a great wind into the sea, and there was a mighty tempest in the

sea, so that the ship was like to be broken. Then the mariners were afraid, and cried every man unto his god, and cast forth the wares in the ship into the sea, to lighten it of them. But Jonah was gone down into the sides of the ship ; and he lay, and was fast asleep. So the ship-master came to him, and said unto him, What meanest thou, O sleeper ? arise, call upon thy God, if so be that God will think upon us, that we perish not." (Jonah 1 : 4–6.) The picture here presented us will be recognized by all as true to nature. The incident related has been substantially repeated a thousand times in every age and upon every sea. Men who, in quiet waters or in health, live without prayer will call earnestly upon God in a storm or in the ward of an hospital when death threatens and friends forsake them.

2. Should the attempt to apply this test be made, the experiment in progress will be either unknown, or it will be known to the community at large. If it be unknown, as Christians are accustomed to pray in their public assemblies and in their closets also for the sick and the afflicted, how can we shut out the influence of the many prayers thus offered from the ward of the hospital from which all influence of prayer is to be excluded, if this test is to be of any real value in settling the question in dispute ? But, on the other hand, if the trial of the experiment was generally known, would not this knowledge awaken a sympathy on behalf of the sufferers in the hearts of good and kind men and women, which would lead them to pray with especial earnestness for those whom this experiment was seeking to cut off from all influence of prayer ? If prayer be, indeed, an efficient agent in healing disease—and the great body of Christian men and women in the world believe that it is—then the experiment must, in their estimation, be a very

cruel one ; and the knowledge that it was being tried would lead the whole praying community to unite in frustrating the attempt. "The voice of sympathizing humanity would rise on behalf of these sufferers night and day ; and if special and specially earnest prayers have any influence, the proposed design would be signally counteracted. The ward which was not to be prayed for would be in better condition than the other." In the language of science, in the experiment proposed there would be disturbing forces at work which, by no possible means, could we either exclude or control, and so the result of the experiment would be worthless in so far as the determination of the point in question is concerned.

§ 74. *Tyndall's Test Impracticable.*

The matter proposed to be tested is in question between scientists of Professor Tyndall's school and Christian men who believe in the Christian doctrine of effectual prayer. The teaching of Scripture respecting the nature of the prayer which is effectual is clearly set forth by the Apostle James in terms making an application of it to the very case under consideration. "The prayer of faith shall save the sick, and the Lord shall raise him up. . . . Pray one for another, that ye may be healed. The effectual fervent prayer of a righteous man availeth much." (James 5 : 15, 16.) It is such prayer as is here described, and such only, that must be used in the experiment proposed. Just as Professor Tyndall would doubtless insist that the drugs used should all be pure and genuine, so has the Christian a right to insist that the prayers used shall be the prayers which he believes to be alone effectual.

1. Let the reader notice here that according to Scripture it is not the prayer of any and every man that will

"save the sick," but the prayer of "the righteous man"—righteous in the Gospel sense of the term, righteous in the sense in which Elijah was a righteous man, whose effectual prayer is cited in the immediate context as proof of the doctrine taught. In the exercise of His sovereignty God may answer the prayer of any man, and sometimes, doubtless, does answer even the wicked prayers of wicked men; but He has bound Himself to answer the prayers of righteous, Christian men alone.

2. It is not every prayer of the Christian man that will "save the sick," but "the prayer of faith," "the effectual fervent prayer," the *inwrought* prayer, as the Greek word, energoumenos, is more properly rendered. What the Apostle James means by an *inwrought* prayer we may learn from Rom. 8 : 26, 27—"Likewise the Spirit helpeth our infirmities : for we know not what we should pray for as we ought : but the Spirit itself maketh intercession for us with groanings which cannot be uttered. And he that searcheth the hearts knoweth what is the mind of the Spirit, because he maketh intercession for the saints according to the will of God." The prayer of Elijah "that it might not rain, and it rained not on the earth by the space of three years and six months," is cited by the Apostle James as an instance of such a prayer ; and respecting it Elijah himself says, addressing himself to Jehovah : "I have done all these things at Thy word." (1 Kings 18 : 36.)

3. Christians are, in the Scriptures, frequently spoken of as "children of God," as in Rom. 8 : 15, 16—"For ye have not received the spirit of bondage again to fear, but ye have received the spirit of adoption, whereby we cry, Abba, Father. The Spirit itself bearing witness with our spirit, that we are the children of God ;" and sons of God, as in Gal. 4 : 6—"And because ye are sons,

God hath sent for the Spirit of His Son into your hearts, crying Abba, Father." On the use of the double appellation here, first the Aramaic Abba (father) and then the Greek *pater* (father), Dr. Eadie remarks: "That endeared repetition characterizes a true child, as it clings to the idea of fatherhood, and loves to dwell upon it." Adoption among men is often a mere form; the adoption into the family of God is always a reality, the adopted child always receiving "the spirit of adoption whereby he cries Abba, Father." A Christian, then, is one who has and cherishes a loving, trusting, reverent child-spirit toward God his Father in heaven; and for this reason, if for no other, he will always pray, even when he most earnestly desires a particular thing, with submission to God his Father's most wise and holy will. Thus our only perfect exemplar prayed when in Gethsemane he cried: "O my Father, if it be possible, let this cup pass from me: nevertheless, not as I will, but as thou wilt." (Matt. 26 : 39.) Now let the reader remark:

First. It is a well-known, wise, and just principle governing God's administration of His kingdom of grace, that He will give such proof of the truth of the Christian religion as a whole, and of its several fundamental doctrines in particular, as shall thoroughly satisfy the ingenuous inquirer, but not "signs from heaven" to shut the mouths of cavillers. Our Lord says: "If any man will do his will, he shall know of the doctrine, whether it be of God" (John 7 : 17)—*i. e.*, If any many will honestly set about making all right between God and himself, and do this with the Scriptures in his hands, and making those Scriptures his guide, he shall know that Christianity —and as a part of that Christianity the doctrine of effectual prayer—is from God. Thousands in every age

and country in which Christianity has been preached have put this matter to the test, and as the result have learned to believe that Gospel with a faith which death itself could not disturb. This is God's plan for securing a certain result; and, in so far as we can see, it is about the only plan which will preserve for man his free-agency in matters which concern his salvation and the life to come. And, now, what does Professor Tyndall propose that a Christian, a loving, trustful child of God, shall do? That he shall come to God with the prayer that He will set aside this His plan, pursued for long ages with abundant success, and give "a sign from heaven," not that those who demand it may be made humble believers thereby—for he has no reason to think that "a sign from heaven" in our day would have any better effect than the signs given by our Lord did on the Scribes and Pharisees eighteen hundred years ago—but that the mouths of certain cavillers may be shut. Can a trustful, reverent child of God put up such a prayer? Can I believe that such a prayer will ever be "inwrought" by the Spirit of God, whose office it is "to assist the infirmities" of God's children? The test is impracticable.

Second. What is necessarily involved in the prayer which Professor Tyndall proposes that the Christian man shall offer? The sick in one ward are to be prayed for; and on the supposition that prayer will "save the sick" —and this is the Christian's belief—they will recover. Among the sick in this ward there may be a Christian who, after a life of trial and suffering sent of God to purify him, is now fitted for heaven—one who, like Lazarus, has long been clothed in rags, and full of sores, and in his poverty laid at the rich man's gate that he might be fed with the crumbs which fell from that rich man's table, has now suffered his appointed time, and

the angels are waiting to carry him away, that he may rest in Abraham's bosom. The sick in the other ward are not to be prayed for; and on the supposition that prayer is effectual, they must die. Among these there may be one who has long rejected the grace of Christ, but in whose case, for some reason—possibly in answer to the prayers of a pious mother—prayers offered years ago, while that mother was yet on earth, God purposes to grant another "season for repentance;" and if that season be granted he will improve it, and so secure salvation. There is nothing improbable in these suppositions. And knowing this to be so, what does Professor Tyndall ask a Christian man to do? By his prayers to dismiss the waiting angels, and remand Lazarus to his rags and his sores again; by his prayers to close the gate of heaven forever against a poor prodigal whom the Father was waiting to welcome home, and open an impassable gulf between a godly mother in heaven and the son of her prayers. No Christian could do this. Professor Tyndall himself, with his eyes open to all that was involved in the prayer, would not ask the Christian to do it. The test is impracticable.

§ 75. *The Efficacy of Prayer to be Tested by Observation.*

If in this case experiment is worthless, and the test which it might furnish impracticable, is there no method known to science by which the efficacy of prayer can be determined? I answer, Yes. Careful observation is open to our use.

In establishing the truths of science, careful observation is as often resorted to as is experiment, and its results as thoroughly accepted. The accepted belief among scientists respecting the density of the train of a comet

furnishes an example of such a result. Moving as the comet does, far away in the heavens, we cannot possess ourselves of any portion of its luminous train that we may weigh it in balances. But we can, and astronomers have, followed comets in their movements through the heavens ; have subjected them to careful observation. And in doing this, they have learned (1) that bright stars can be seen through the train of a comet, and (2) some years ago, when a comet in its course passed between Jupiter and his satellites, they found that no sensible effect was produced upon the motion of those satellites, while the comet was detained some weeks by their attraction. From this they inferred that the train of a comet must be exceedingly rare—rarer, even, than the light clouds sometimes seen floating in the summer sky. And this conclusion is considered as satisfactorily established, and by a method as thoroughly scientific as it could be by securing a portion of a comet's train and weighing it in balances.

Let us turn, then, to observation, and see if in this way we can settle the question respecting the efficacy of prayer in healing the sick. I might here direct attention to an instance of prayer "saving the sick" recorded in the Bible. In 2 Kings 20 we are told that Hezekiah, King of Judah, on a certain occasion "was sick unto death," that "he turned his face unto the wall, and prayed unto the Lord, saying, I beseech thee, O Lord, remember now how I have walked before Thee in truth and with a perfect heart, and have done that which is good in Thy sight. And Hezekiah wept sore. And it came to pass, afore Isaiah was gone out into the middle court, that the word of the Lord came to him, saying, Turn again, and tell Hezekiah the captain of my people, Thus saith the Lord, the God of David thy father, I

have heard thy prayer, I have seen thy tears : behold, I will heal thee : on the third day thou shalt go up unto the house of the Lord. And I will add unto thy days fifteen years." Here is an unmistakable instance of prayer "saving the sick." But I may be told this was a miracle ; and, as is conceded on all hands, the age of miracles is passed. To this I answer, The answer to Hezekiah's prayer was no more a miracle than the answer to Elijah's prayer at Carmel was ; and the Apostle James cites the efficacy of Elijah's prayer for the encouragement of Christians in every age and country to pray for the healing of the sick.

To remove all possible objection on any such grounds as these, I will ask the reader's attention to two cases which have occurred in our day, for the truth of which I will myself vouch. And I select these cases, not because they are singular, but because they are not singular. Cases of substantially the same kind have, I doubt not, come under the observation of every Christian who has lived long in the world.

1. A young man, son of an honored minister of the Gospel, was hopefully converted when he was about sixteen years of age, and after a season of careful and prayerful consideration he gave himself up to serve God in the work of the ministry. During his college course he "lost his first love," and a worldly ambition taking possession of his soul, he determined to turn to the profession of the law as his life-work. Shortly after commencing the study of law he was prostrated by an attack of sickness which all his friends, and he himself, thought must prove fatal. His sickness was of such a kind as to leave him in the undisturbed possession of his powers of thought and reasoning. A godly sorrow for his sin in breaking covenant with God was awakened within him.

He sought, and, as he believed, obtained pardon for this his sin. And then his original desire to serve God in the ministry of His word taking full possession of his soul, he prayed earnestly that God would restore him to health, that He might thus serve Him. Contrary to the expectation of his physician and friends, he began to recover from that very hour ; and he is to-day, and has been for more than twenty years, preaching the Gospel with great effect.

2. A Christian father was unexpectedly, suddenly, called to part with a beloved child. She had always been a thoughtful, though by no means a precocious child, and for several reasons her father had cherished the hope that as her mind was opening and her powers developing they were being sanctified by the Spirit of God. He knew that in addition to her daily prayers repeated at her mother's knee she had been accustomed, for several months, to go away by herself to pray to God in secret. Her disease, a form of membranous croup, made such rapid progress that she was dying, her senses and power of speech gone, before he thought of saying anything to her about death and her trust in Jesus. To all appearance she died. Her mother's hand had closed her eyes, and friends had left the room to make ready her shrouding. It was the father's first experience of parting with a child, the first death in the family, and he knelt by the bedside of his child and prayed with deepest earnestness that God would give him some assurance that in giving up his loved one he was giving her into the arms of Jesus. While he was yet praying, contrary to the expectation of all the child began to breathe again, and slowly recovering her senses and power of speech, she put her arms around her father's neck, and drawing him down close to her, said, as if divining his

thoughts, "Father, I am dying," and a sweet smile lighting up her countenance, she added, "I am going to Jesus;" and then, slowly unclasping her arms and lying back upon her pillow, her spirit took its flight.

Such cases of answer to prayer as the two related above are occurring from time to time within the knowledge of every Christian; and in them we have proof of the efficacy of prayer *by observation*—a proof which no scientist can reasonably object to, a proof which, in other cases, Professor Tyndall himself would consider just as satisfactory as any which could be furnished by experiment.

§ 76. *Prayer Instinctive.*

"Wherever there is religion, true or false, there is prayer. Even the speculative atheist, when pressed by danger, has been known to belie his pretended creed by calling in anguish upon the God whom he denied. This natural *instinct of prayer* reposes for its ground on God's perfections and man's dependence and wants. And so long as these two facts remain what they are, man must be a praying creature. Emotion and the expression of emotion are the unavoidable because natural outgoings of his powers. He cannot but put forth his activity in efforts tending to the objects of his desires; he must cease first to be man; and prayer is the inevitable, the natural effort of the dependent creature, in view of exigencies above his own powers. To tell him who believes in a God not to pray is to command him to cease to be a man." (Dabney's "Theology," p. 715.)

"Among all the moral *instincts of man* there is no one more natural, more universal, more unconquerable than prayer. To prayer the child applies himself with eager teachableness. On prayer the aged man falls back

as on a refuge against decay and solitariness. Prayer rises spontaneously to young lips which can scarcely lisp the name of God, and to the dying lips which have no longer strength to pronounce that name. In all peoples, renowned or obscure, civilized or savage, one meets with acts and set forms of invocation. Wherever man lives, under certain circumstances, at certain hours, under the dominion of certain impressions of the soul, his eyes raise themselves, his hands seek each other, his knees bow, to petition or to give thanks, to adore or to deprecate. With joy or with fear, openly or in the secrecy of his heart, it is to prayer that man betakes himself, in the last resort, to fill up the void of his soul, or to bear the burdens of his destiny. It is in prayer that he seeks, when all is failing him, support for his weakness, comfort in his afflictions, encouragement for his virtue." (M. Guizot, as quoted in the "Boyle Lectures for 1873," pp. 66, 67.)

"Grant God and man (God's yet unfallen creature) standing in His presence, conscious of God's power, wisdom, and goodness, and of his own dependence upon Him, and prayer is an intuitive idea. It remains intuitive when man stands before God as a fallen creature, conscious how far he has gone from original righteousness, though it requires reassuring under his thus altered moral circumstances. . . . It remains intuitive, though it requires redirecting, when man has slighted the one true God, and addressed himself to other objects of worship, whether instead of Him or beside Him. It remains intuitive when man has asked amiss that he may expend what he obtains upon his lusts, though it requires formulating, as Christ formulated it in His rehearsal of the Lord's Prayer, first to His disciples and then to a large auditory. It remains intuitive, though, when the ful-

ness of time was come, Christ was plainly set forth as the medium through whom it is to be offered, and the Holy Spirit was made known as co-operating with the human spirit in its utterance. By such revelations it is sublimed, indeed, and purified, but it is not thereby rendered less an intuitive effort on the part of man. These several and successive interworkings gave prayer a larger scope, or reassured or extended it, or recalled it from abnormal movement, or rescued it from utter perversion, or showed man the most appropriate channel through which it should pass, and the most effectual aid by which his own effort might be sustained. They did not originate it. Man found the faculty or tendency toward it within him, and practised it from the beginning." (Dr. Hessey's "Boyle Lectures for 1873," pp. 11, 12.)

I have given the arguments for the instinctive nature of prayer in the form of lengthened extracts from the writings of others rather than in my own words for two reasons: (1) Because they are therein certainly as clearly expressed as I could hope to express them; and (2) that the scientific reader, who may not be familiar with modern Christian literature, may see that on this point leading Christian writers of different schools in theology are agreed.

Paley defines instinct as "*a propensity prior to experience and independent of instruction.*" "The nest of the bird, the honeycomb of the bee, the web of the spider, the threads of the silkworm, the holes or houses of the beaver, are all executed by instinct, and are not more perfect now than they were long ages ago. In the beginning of life we do much by instinct and little by understanding; and even when arrived at maturity there are innumerable occasions on which, because reason cannot guide us, we must be guided by instinct. The

complex machinery of nerves and muscles necessary to swallowing our food, walking, etc., is set agoing by instinct. The motion of our eyelids, and those sudden motions which we make to avoid sudden danger, are all instinctive." (Imperial Dictionary, art. "Instinct.")

The Duke of Argyll has well said: "To account for instinct by experience"—as Darwin has done—"is nothing but an Irish bull. It denies the existence of things which are nevertheless assumed in the very terms of the denial; it elevates into a cause that which must in its nature be a consequence, and a consequence, too, of the very cause which is denied. Congenital instincts and hereditary powers and pre-established harmonies are the origin of all experience, and without them no one step in experience could ever be gained." ("Unity of Nature," p. 94.)

Instincts, then, are a part of the original constitution of man and the lower animals; they come directly from God our Creator; and hence it is, as scientists universally admit, instinct, within its proper sphere, is a safer, more unvarying guide than reason. We trust to its guidance in all other directions; why should we distrust it when it would lead us to God's mercy-seat in prayer?

In closing his discussion of instinct, Paley, having referred to the sacrifice a bird makes in sitting upon her nest at the very season when everything invites her abroad, writes: "I never see a bird in that situation but I recognize an invisible hand detaining the contented prisoner from her fields and groves for the purpose, as the event proves, the most worthy of the sacrifice, the most important, the most beneficial." (Paley's Works, vol. 4, p. 210.) That same invisible hand—invisible to the eye of sense only, not to the eye of faith—it is which would lead man in his helplessness to an Almighty God,

and in his guiltiness to God his Saviour. In his words, "O Thou that hearest prayer, unto Thee shall all flesh come" (Ps. 65 : 2), the psalmist gives utterance at once to a profound truth of philosophy and to a prophecy. A prayer-hearing God is man's great necessity ; and to a prayer-hearing God, sooner or later, shall the gathering of the people be.

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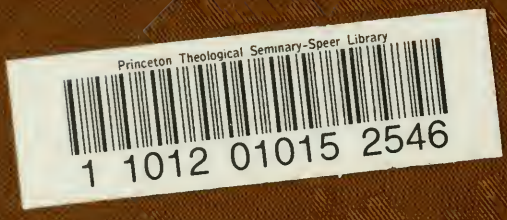
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